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Adoption of an Idea Management Tool in a Service Organization

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Aalto University School of Science Degree Programme in Information Networks	ABSTRACT OF THE MASTER'S THESIS

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Abstract:

The present study has examined idea management tools and their ability to support grassroots level innovation activities from a practice theoretical perspective. Literature review revealed that majority existing research on innovation management tools follows mechanistic world view which presumes that tools have direct unilateral effect on the behavior of the users and that the experienced benefits are mostly constituted by the technical features of the tools. Design of the tools has emphasized systematization of innovation efforts and measures aiming reduce uncertainty in development.

However, research on innovation practices and practices of ICT use challenge these assumptions. Since innovation processes are inherently uncertain, the sensibility of trying to impose opposing ideals has been questioned. Also, practice research has emphasized the role of contextual factors in the constitution of practices around support tools as well as unpredictability and uncontrollability of the constitution process.

Empirical single case study was conducted in a financial organization which had recently adopted an idea management tool. Research data consisted of 19 interviews, rich logs from the idea management tool and a vast array of documents related to the preparatory phase of the adoption process. Data analysis was inspired by the principles of grounded theory (Charmaz 2000) and systematic combining (Dubois and Gadde 2002). A modified version of a research frame proposed by Orlikowski (2000) for the examination of constitution of ICT related practices was used.

In the case company, idea management tool was used especially for sharing raw, unpolished ideas which were outside the idea generator's formal job role. User community provided support to creative individuals by offering encouragement, proposals for refinement as well as suggesting potential contacts and stakeholders. Use of the system in general was perceived as an extra role effort which presented a barrier for use. Large differences between ideas were found in the number and nature of received comments.

Existing development, rewarding and inter-divisionary collaboration practices had a major impact on resulting benefits from the idea management tool adoption. Discrepancies between existing practices and new practices around the idea management tool generated tensions which hampered organizations ability to implement ideas. Tensions lead to lengthy decision making processes which eradicated the momentum which had formed around the idea. Problems started to skew idea selection practices towards favoring ideas which were easy to advance, instead evaluating ideas based on their content and other qualities.

Empirical observations indicated that ensuring compatibility between local practices of different parties as well as global organizational practices such as rewarding is a key issue in ensuring success in idea management tool adoption and innovation efforts in general.

Keywords: Idea management tool, Innovation, Innovation practices, ICT practices

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Tiivistelmä:

Tässä työssä on tarkasteltu käytäntöteoreettisesta näkökulmasta ideajärjestelmiä ja niiden kykyä tukea ruohonjuuritason innovaatiotoimintaa. Ideajärjestelmät ovat tietokoneohjelmistoja, joissa käyttäjät voivat jakaa ideoitaan vapaasti sekä kehittää niitä yhteistyössä. Kirjallisuuskatsaus osoitti että valtaosa aikaisemmasta ideajärjestelmätutkimuksesta seuraa teknologiakeskeistä näkökulmaa, joka olettaa että työkaluilla on suora vaikutus käyttäjien toimintaan ja että työkaluista saatava hyöty määrittyy ennen kaikkea teknologian ominaisuuksien mukaan. Työkalujen suunnittelussa on painotettu innovaatiotoiminnan systematisointia ja epävarmuutta vähentäviä toimia.

Käytäntötutkimus innovaatiotoimintaan ja tietotekniikan käyttöön liittyen on kyseenalaistanut nämä oletukset. Innovaatioprosessit ovat luontaisesti epävarmoja ja vastakkaisten ideaalinen seuraamisella on todettu olevan haittavaikutuksia. Käytäntötutkimus on myös alleviivannut kontekstitekijöiden merkitystä käyttötapojen muodostumisessa, joka nähdään lähtökohtaisesti ennalta-arvaamattomaksi ja vaikeasti kontrolloitavissa olevaksi prosessiksi.

Empiirinen yhden yrityksen case-tutkimus suoritettiin finanssialan organisaatiossa, joka oli juuri ottanut käyttöön ideajärjestelmän. Tutkimusdata koostui 19 haastattelusta, rikkaista ideajärjestelmän lokitiedoista sekä käyttöönottoon liittyvistä valmisteludokumenteista. Analyysityö tehtiin aineistolähtöisesti, hyödyntäen muokattua versiota Orlikowskin (2000) esittämästä ICT käytäntöjen tutkimuskehikosta.

Case yrityksessä ideajärjestelmän kautta jaettiin erityisesti verrattain raakoja ja hiomattomia ideoita, jotka olivat ideoijan oman työnkuvan ulkopuolella. Käyttäjäyhteisö tuki yksittäisiä ideoijia tarjoamalla kannustusta, kehitysehdotuksia ja kontaktivinkkeja idean kannalta relevanteista tahoista. Järjestelmän käyttö koettiin pääsääntöisesti työroolin ulkopuoliseksi toiminnaksi, mikä osoittautui käyttöä estäväksi tekijäksi. Ideoiden välillä oli suuria eroja kommenttien määrässä ja luonteessa.

Olemassa olevat kehitys-, palkitsemis- ja osastojen väliset kollaboraatiokäytännöt määrittivät suurilta osin ideajärjestelmän käyttöönotosta saatavia hyötyjä. Ristiriidat uusien ja olemassa olevien käytäntöjen välillä muodostivat jännitteitä, jotka hankaloittivat esitettyjen ideoiden toteutusta. Jännitteet johtivat pitkiin päätöksentekoprosesseihin joiden aikana innostus idean ympärillä laantui. Ongelmat vaikuttivat myös ideoiden valintakäytäntöihin, joissa alettiin painottaa edistämisen ja toteutuksen helppoutta muiden idean ominaisuuksien sijaan.

Tutkimuksen mukaan eri tahojen ja osastojen paikallisten käytäntöjen ja organisaation laajuisten käytäntöjen yhteensopivuuden varmistaminen on tärkeässä osassa innovaatiotoiminnan menestyksen varmistamisessa.

Asiasanat: Ideajärjestelmät, Innovaatio, Innovaatiokäytännöt, ICT käytännöt

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1 Introduction

The field of innovation management is suffering from a mid-life crisis. Passed up opportunities and lost dreams are now being pursued. Already in 1982, Klein and Rosenberg questioned linear development models and proposed that more attention should be paid to the natural dynamic of innovation processes, characterized with uncertainty and complexity. In 1986 Richard Barras proposed that differences might exist between innovation in product and service industries. In the 90s both perspectives were forgotten in mainstream discussions and the foundations of modern innovation management were built on an approach pursuing a single ideal model for creating new tangible goods. Now again these questions first posed 30 years ago are vigorously examined.

During the current millennium, focus on services has been revitalized with a large body of research concentrating on modifying existing goods-oriented concepts and creating completely new ones to fit the needs of new service development. Similarly, the question how to design organizational arrangements to be in line with the natural dynamics of innovation processes has again been brought to the fore. This study aims to contribute to the latter call by examining technological arrangements, namely idea management tools and their ability to support innovation practices of their prospective users.

The possibilities of idea management tools in supporting innovation have been studied for a long while and research has focused especially on how they can be used for capturing and sharing ideas and how the creative processes of people generating ideas can be supported (Montoya-Weiss and O'Driscoll 2000, Flynn et al. 2003). While a lot has been written on the potential of these systems, little empirical research whether the systems actually provide support in practice has been conducted. Similar to mainstream innovation research in general, studies of ICT systems in innovation context have mostly adopted a managerial perspective and pursuit of ideal models for activities.

The main research questions for this study are as follows:

1. What kind of practices form around the adopted idea management system?
2. What kinds of factors are related to the constitution of the practices?

By seeking answers to these questions through a literature review and empirical observations in a case organization, this study aims to contribute to the understanding of the use of idea management tools on the grassroots level. In doing so a modified version of the research frame on ICT practices proposed by Orlikowski (2000) is followed. Rich data gathered from a service organization where

an idea management tool has been implemented is reflected against innovation management, innovation practice and research on ICT practices.

Study begins with a literature review. First central concepts and terms in innovation research are reviewed to form a solid basis for the examination of innovation literature. Next, different tools and other mechanisms with which organizations aim to support their innovation activities are discussed. Special attention is given to idea management tools, since they lie at the core of the study. Literature on formal process models of innovation are also reviewed thoroughly, as idea management tool implementations are usually accompanied with efforts to formalize the early phases of innovation process. This is followed by an introduction to practice theoretical approach on organizational research including presentation of key assumptions and concepts related to it. In the subsequent parts existing research on innovation practices and ICT use practices is examined. Literature review is concluded with a summary of the main findings.

After the literature review, the empirical part of this study is presented. First research design along with data collection and analysis is discussed. This is followed by a detailed description of the studied case. The results section is divided into two parts: practices which the users enacted in the system and the conditions which formed the backdrop for the practices. Discussion section reflects the findings against previous research, suggests implications for practitioners, discusses the limitations of the study and proposes avenues for future studies. Study is concluded with a brief summary.

2 Literature Review

Literature review is divided into three parts. First, terminology and concepts central to innovation research are examined in order to form a solid basis for the study. After this, review focuses on research on organizational arrangements and how they support or inhibit innovation. Two forms of arrangements, idea management tools and formal innovation process models, are studied more in depth. Finally, practice theoretical approach to organizational studies is introduced and literature on innovation practices and ICT use practices is examined. Section is concluded with a summary of the main findings.

2.1 Central Concepts in Innovation Literature

As research on innovation has increased and innovation management emerged as a hot topic among practitioners, the terminology around innovation has become somewhat ambiguous. Different, sometimes even contradictory meanings are attached to same terms and concepts, creating challenges when discussing the issues. The purpose of this section is to present what is meant with each concept and how innovation and activities related to it are perceived in general in the context of this study.

Innovation in a nutshell is about coming up with something new that has value, and making it real. Innovation is more than an invention, as it consists of not only a new idea, but also developing and implementing it (Van de Ven et al. 1999). Therefore, according to the strict definition, invention can only be defined as an innovation after it has been introduced and proved valuable. This is problematic if one wishes to examine the early parts of innovation processes since it is impossible to be sure beforehand whether an idea will become an innovation or not. Therefore, this study defines innovation activities as all such efforts, which aim to the generation and realization of ideas which are perceived novel and useful to the organization regardless of whether the invention in the end becomes an innovation.

Some authors have identified different types of innovation based on the idea content. Schumpeter (1934) separated between five different types of innovation:

1. New goods
2. New methods of production
3. New markets
4. New sources of supply
5. New organization of an industry

Schumpeter's (1934) classification illustrates well the breadth of different kinds of content that innovation can encompass. Other categorizations have been made as well. Van de Ven et al. (1999) have proposed a synthetization to two types : (1) Technical innovation, meaning new products, services and technologies and (2) Administrative innovation meaning new procedures, policies and organizational forms. Some authors object to distinctions between different types of innovation, since a single innovation can encompass several types at the same time. Brown and Duguid (1991) give an example of a new type of typewriter that required a new style of working before it became useful. This gives an illustration how technical innovation can require an administrative innovation before the full potential of the new technology is realized.

Distinctions can also be made based on the novelty of an idea. There is a vast amount of literature discussing the differences between incremental and radical innovation. Good examples of incremental innovation are product upgrades, like putting a wee bit bigger screen into a smartphone. Nintendo Wii is often cited as a radical innovation since it introduced gaming to a whole new type of audience steering the company away from their previous customer base. Making distinctions between the two is not unproblematic and several definitions have been proposed. Leifer and al (2000) define radicalness through the amount of change or improvement in brings compared to the previous solution. Others have argued that it should be defined based on the risk and uncertainty related to the attempt to seize the opportunity (Hill and Rothaermel 2003). This uncertainty can be related to issues such as customer requirements, utilized technologies or changing business environment (Zhang and Doll 2001).

In this study, distinctions between technical and administrative or incremental and radical innovation are made only to better describe the content and composition of discussed ideas to the reader and there is no special focus on a specific types of innovation. Regarding innovation in general, this study embraces a lenient definition of newness defining it on the organizational level instead of on the level of an industry. This is because even if idea has been realized elsewhere, each organization still needs to apply it in their specific context.

Innovation process consists of the chain of events from the idea genesis to its realization. When attempting to create something new, it's impossible to be completely sure of what will happen and what the final outcome will be. Along these lines Van de Ven et al. (1999) describe innovation process as *"inherently uncertain and dynamic"* and seemingly following a *"random process"*. It should be noted that this view is in strong contrast to how innovation process models describe the process so mixing up these two concepts should be avoided. Process models will be examined in detail in section 2.2.1.

Innovation processes consist of collaborative activities. Though the actual idea creator might be a single individual, the development and implementation requires efforts from many different stakeholders. In order to get a new phone to a market, one needs decision makers for the allocation of resources, designers to make it pretty, production in order to actually produce it , sales and marketing to make people aware and willing to buy it and so on. Thus innovation activities are very much about interaction between people. This interaction takes place not only in the formal arenas of decision meetings or workshops. People discuss their ideas informally at the coffee break, pop into colleagues' rooms to get quick reactions regarding things that have popped into their heads etc. (Lempiälä 2011). All the different parties have different operational logics and speak different languages. This relational complexity needs to be acknowledged in order to really understand the nuances of the innovation process (Garud et al. 2011).

It is important to notice that especially when dealing with radical innovations, the relational complexity is not limited by the borders of the organization. Take the flat panel high definition television sets. Only recently have we been able to enjoy the full benefits of the improved image quality that the technology provides. Though the TVs themselves have been available for a decade, other crucial pieces have lagged behind. It took a long time for the production, broadcasting and other related technology to reach similar maturity and market penetration. If TV manufactures had taken this into account properly, the ecosystem around HDTV might have developed more quickly, which would have made their lives a lot easier.

In most abstractions of innovation processes, the process is divided into three parts: front end, development and commercialization/implementation phases (Van de ven et al. 1999, Poskela 2009). This division is widely used throughout innovation research and therefore deserves some attention. The front end phase consists of everything that happens before a robust concept of the idea exists, based on which a decision on implementation can be made. Nick name "Fuzzy front end" has also been used to underline the ambiguity and uncertainty characteristic to this early part (Zhang and Doll 2001) Development phase starts when efforts concretize into a distinct development project and ends to a finalized product or service. Koen et al. (2001) argue that this phase is more disciplined and requires different managerial practices than the front end. During the third and final phase, commercialization, the result of the effort is introduced to the market, or in the case of an administrative innovation to the organization. The present study is focused mainly on the front end phase, though the interface between front end and development stages is discussed as well.

Van de Ven et al (1999) have identified common elements occurring elements during different phases of innovation processes in their longitudinal studies of innovation processes. They argue

that each process is unique, but that some phenomena are often present in the development of all kinds of innovation:

- **Initation period**: Extended gestation periods, internal and external shocks as triggers, plans used as sales vehicles rather than actual plans
- **Development period**: Proliferation of single idea to multiple paths of development, setbacks and mistakes, shifting criteria of success triggering power struggles, fluid participation of innovation personnel, interventions from investors and top managers, developing relationships with other organizations leading to unintended consequences, industry team playing to create necessary infrastructure
- **Implementation / Termination Period**: Integrating new with old and reinventing for the local situation, attribution of success/failure by top management influencing the fate of the innovation and innovators

The list is not claimed to be exhaustive, nor are all elements present in every innovation process. It is not intended as a framework to approach innovation, but as a portrait of the phenomena that make innovation processes so unique and multifaceted that innovation processes could be called innovation journeys (Van de Ven et al. 1999).

During the innovation process, people carry out a wide variety of different activities. Actions range from individual thinking to creating prototypes and drafting design documents to lobbying for funding. One representation of this is the cyclical model proposed by Koen and Al (2001), illustrated in Figure 1. They see that innovation processes consist of five different activities which actors undertake in a non-linear, sometimes even random fashion: (1) idea genesis, (2) idea selection, (3) concept and technology development, (4) opportunity identification and (5) opportunity analysis. These activities are influenced by environmental factors: business strategy, competition, organizational capabilities and enabling science and technologies. Company culture and leadership acts as the primus motor for the efforts (Koen and al 2001). It is important to note that this model is intended first and foremost as a communicational, not a management tool. Managerial process models are presented more in detail in section 2.2.1

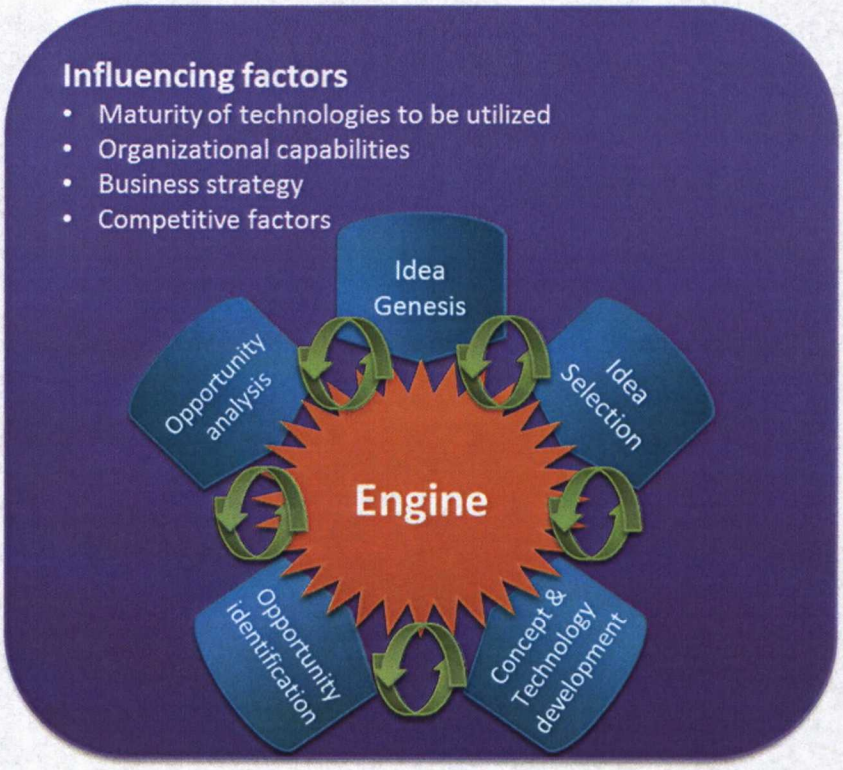

Figure 1: Cyclical model of Koen et al. (2001)

2.2 Supporting Innovation

In efforts to support continuous development of innovations, different kinds of support mechanisms and arrangements have been proposed. The following sections will examine organizational arrangements in general and discuss more in depth two specific types of arrangements: formal innovation process models and idea management systems. Organizational arrangements refer to all types formally defined organizational practices such as official decision making processes, enforcing process models to guide activities, utilizing brainstorming techniques in generating ideas or rewarding schemes.

Usually organizational arrangements designed to improve performance strive for the reduction of uncertainty in operations (Garud et al. 2011). However, innovation activities in general do not consist of predictable actions. They are entangled with normal everyday routines and in large parts the content, actors and central activities are case-specific (Dougherty and Hardy 1996, Van de Ven et al. 1999). This discrepancy between the ideal of uncertainty reduction and ambiguousness of innovation processes creates significant challenges for the efforts to create tools to support innovation. Garud et al. (2011) argue that by default organizations are designed to restrain the complexities that are inherent to the development of innovations because the same complexities are seen to inhibit the efficiency of normal operations. Efficiency-based performance metrics which emphasize planned schedules and stress financial returns have been found to restrain innovation

activities (Dougherty and Heller 1994). Similarly, rigid division of activities to separate departments can lead to performance improvements, but the flipside is that the amount of interaction between individuals is reduced and people are locked into specific ways of thinking, from which it is difficult to step out of when necessary (Dougherty 1992). By ensuring that organizational arrangements don't contradict innovation activities, development can be made more meaningful and legitimate for all actors, leading to more innovative organization (Dougherty and Hardy 1996, Kanter 1988).

The importance of effective collaboration and communication between units has been underlined by many authors (Kanter 1988, Flynn et al. 2003, Garud et al. 2011, Dougherty and Hardy 1996). Examining practices at 3M, Garud et al. (2011) found several concrete mechanisms which were used to facilitate knowledge transfer. Employees were transferred regularly between divisions to improve understanding between units. Also, there were regular technology fairs and trade shows, where employees were able to network and familiarize themselves with what others in the company were doing. Regarding more continuous means, Kanter (1988) has proposed broad job descriptions so that gaining the perspective of others and taking responsibility for a larger whole instead of a single aspect are encouraged. Similarly, Dougherty and Hardy (1996) emphasize that employees need to be allowed to step outside their formal roles and not be penalized for it. At 3M, this is facilitated with a practice of 15% time, meaning that each employee is allowed to use 15% of his time to develop things that he finds interesting (Garud et al. 2011). Regarding challenges in collaboration, Dougherty and Hardy (1996) found that in large and mature organizations, it is very difficult to get organization as a whole to commit to an innovation. In cases where developers were able to get their innovation accepted, the personal networks of the actors were found to be crucial for the success. Relying on such mechanisms is problematic, since not everyone with good ideas has accumulated large social networks. Especially when departmental borders need to be crossed, the amount of people with networks extensive enough can be very small. (Dougherty and Hardy 1996)

In addition to collaboration, second crucial issue for innovation has to do with both financial and knowledge resources in the organization. Resourcing innovation efforts should not be based on overhead but consciously made available to induce innovation and that there should be adequate access to different kinds of funding and expertise (Dougherty and Hardy 1996, Kanter 1988). At 3M, there are separate funding mechanisms for financing embryotic, uncertain ideas and well-developed concepts nearing breakthrough (Garud et al. 2011). First aims for providing peace for novel ideas to mature and the latter for accelerating final phases of development and commercialization so that narrow windows of opportunity can be seized (ibid.) Regarding expertise, Kanter (1988) argues that many innovative organizations have free roaming problem-

solving agents with the incentive to commit to spontaneous innovation opportunities. Though reliance on slack is seen as problematic (Dougherty and Hardy 1996, Kanter 1988), arrangements utilizing it should not be automatically frowned upon. 3M had a strong culture of bootlegging, i.e. " *utilizing company-wide resources ... to explore creative ideas* ", which is usually done more or less under the radar (Garud et al. 2011). It can manifest itself in using production equipment during its normal downtime like in weekends. The main idea behind bootlegging is that employees have the ability to take advantage of the vast amount of different assets in their innovation efforts.

Often the real bottlenecks in innovation process are not in the idea generation but the development and realization of ideas (Koen et al. 2001). Problems related to implementation can stem from numerous reasons. It could be caused by the difficulties of getting all the stakeholders with different motives behind the initiative and pulling to the same direction (Dougherty and Heller 1994). It could also be because the organization simply lacks the required resources to make it work (Cooper 1994). Whatever the reasons, without implementation, ideas remain as inventions failing to provide benefits to the organization. Therefore organization's capability to implement ideas which are perceived useful should receive at least the same attention as creative capabilities.

2.2.1 Process Models

To help and instruct the efforts to manage innovation different kinds of formal process models have been proposed. Understanding them is important since they are perhaps the most widely used tool in innovation management. Also, often idea management tool implementations are linked with some kind of formal process model (Montoya-Weiss and O'Driscoll 2000, Bailey and Horvitz 2010). The general idea behind process models is to define all the activities that need to be undertaken and relationships between those activities in order to reach a specific goal. Process models provide a generic abstraction on how operations should proceed. Many process models have been designed for the needs of innovation management. Some of them focus on a single phase of the innovation process, like the front end, while others attempt to encompass it in its entirety. Most models are designed with mainly product innovation in mind (Cooper and Kleinschmidt1986, Cooper 1994, Khurana and Rosenthal 1998, Nobelius and Trygg 2002) which has been criticized in service innovation literature (Alam and Perry 2002). Therefore an innovation process model of Alam and Perry (2002) which has been developed specifically for service innovation is examined in this study as well. The purpose of this section is to briefly go through the most notable process models, and discuss issues related to them.

The de facto standard process model for innovation is the stage-gate model developed by especially Robert Cooper (Cooper and Kleinschmidt 1986, Cooper 1994). It is based on a phased review process developed by NASA in the 1960s (Cooper and Kleinschmidt1986). At the core, it consists

of a sequential blueprint of activities that need to be undertaken to turn an idea into a quality product that has been introduced to the market. Each activity corresponds with a stage and after each stage there is a decision gate concerning whether or not development should continue. Both the actual development and executive review teams are cross-functional which is seen to ensure that all relevant viewpoints from engineering to production and marketing are taken into account throughout the process (Cooper and Kleinschmidt 1986). Cooper (1994) argues that disciplined following of the stage gate process will lead into quicker completion of product development projects and better quality outcomes, as it gives strict information gathering and activity requirements leading into sharp product and market definitions. This is seen to decrease the need to go back to correct mistakes and also help detecting failures sooner. Outline of the stage gate model is presented in the Figure 2

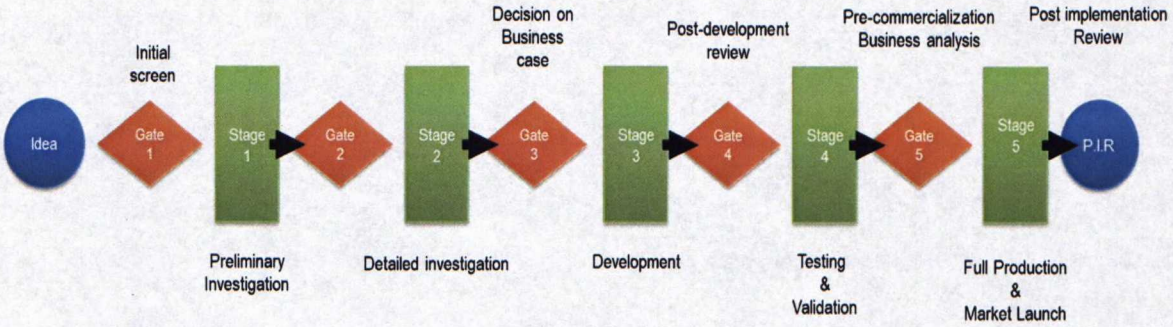

Figure 2: Cooper's (1994) Stage-gate model

During the years, stage-gate has received criticism especially regarding the lack of flexibility which might lead to unnecessary time delays (Nobelius and Trygg 2002, Loch 2000). Cooper (1994) himself has addressed some of the critique in his newer, so called 3rd generation stage-gate model. The 3rd generation model allows skipping stages or starting them before previous gate has been passed and transfers decision authority to the project team so that process can be speeded up (Cooper 1994). It also changes focus from the level of single projects to project portfolio (ibid.). The importance of this has been echoed in the research of Khurana and Rosental (1998), who emphasize especially the integration of business and product strategy in concept definitions and development decisions to ensure that NPD best serves the needs of the organization. They also stress the impacts of product, market and organizational context to the activities and models (ibid), which is not taken into account in the 3rd generation stage-gate (Cooper 1994). According to Khurana and Rosenthal (1998), things like market position, experience of the development team and product radicalness should be taken into account when designing the front end model. Others have taken this idea further proposing that company should have a variety of front end models to fit different types of projects proposing that routine and radical projects should follow different process models (Nobelius and Trygg 2002, Loch 2000).

With regards to service innovation, Alam and Perry (2002) argue that services have unique characteristics, especially the critical role of customers which makes development of services inherently different to product innovation. Based on a study of 12 service organizations they propose two different stage gate inspired models. The first is a completely linear model consisting of 10 steps: (1) strategic planning, (2) idea generation (3) idea screening (4) business analysis (5) team formation (6) service and system/process design (7) personnel training (8) service testing and piloting (9) test marketing and (10) commercialization. There is no overlap between activities and a go-kill decision is made after each step. The second model consists of the same activities, but activities 1 and 2, 3 and 6, 7 and 8 as well as 9 and 10 are run in parallel to increase development speed. Models are visualized in Figure 3 and Figure 4. Alam and Perry (2002) do however argue that by default the steps should be undertaken one by one, unless competitiveness of market requires increasing pace or the firm is small and agile.

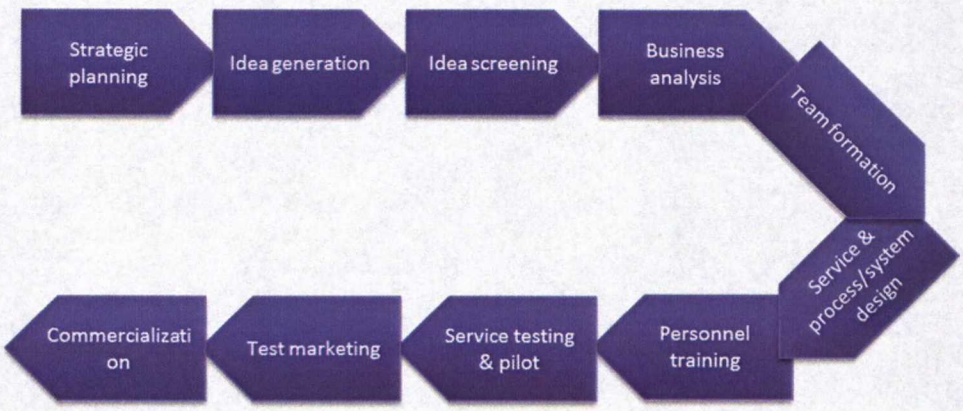

Figure 3: Sequential Development Model of Alam and Perry (2002)

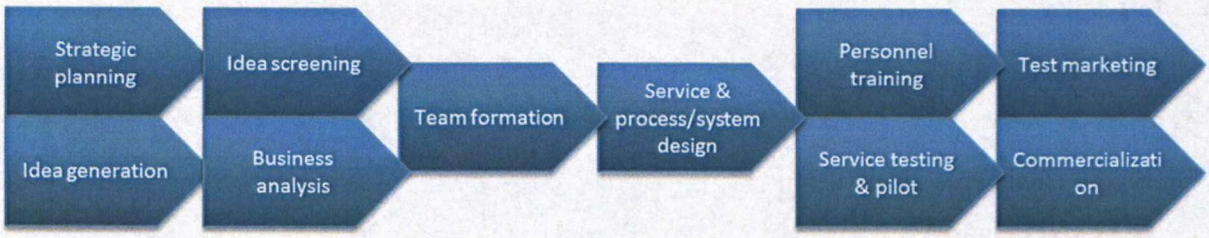

Figure 4: Parallel Development Model of Alam and Perry (2002)

Relatively little is known about the actual benefits of innovation process models with regards to grassroots innovation activities. Loch's (2000) study of 90 development projects found that only 1/3 of the projects actually followed the process model that had been defined by the case organization. Also whether or not the model was followed did not significantly affect the project results, though some advantages regarding the end result attractiveness and schedule keeping were noted (Loch 2000). This work gives a glimpse of the questions that arise regarding the process model based approach on innovation management. Formal process models imply a sequential, though sometimes parallel completion of activities. The rudimentary problem is that process models depict the linear progression as the ideal way to do development and assume that innovation processes should be managed by enforcing rigid frameworks (see e.g. Cooper 1994, Khurana and Rosenthal 1998, Alam and Perry 2002). This idea is contradictory with the findings that innovation activities are inherently iterative and full of surprises (Van de ven et al. 1999). The most notable exception to this linear thinking is the cyclical model proposed by Koen and Al. (2001) which was discussed in section 2.1. However, the authors themselves concede their model as first and foremost a communicational tool so it's usefulness as a managerial instrument is questionable.

2.2.2 Idea Management Tools

The term idea management tool is used to describe IT applications, which enable users to enter ideas into a database and decision makers to browse and assess those ideas. Idea management tools come in many different forms, but Bailey and Horvitz (2010) define their common functionalities as *"submitting, discussing, scoring, and disseminating ideas, among other functions"*. These other functions can include features supporting the creative processes of the ideators, improving transparency and traceability of the innovation process and guiding the strategic alignment of innovation efforts (Montoya-Weiss and O'Driscoll 2000, Cormican and O'Sullivan 2003).

It could be argued that the basic functionalities defined by Bailey and Horvitz (2010) could be realized with many common communication platforms and theoretically applications like e-mail or groupware software could be used as idea management tools. This literature review however focuses only on research on applications that are specifically designed as idea management tools and primarily concerned with improving the innovation efforts of the implementing organization.

Idea Management Tools and Formalization of Innovation Activities

Idea management tools are associated with efforts to formalize the front end of innovation, taking place in two fronts. Firstly, an official form for an idea is defined by providing a fixed template for idea submission (Montoya-Weiss and O'Driscoll 2000, Cormican and O'Sullivan 2003). This dictates how an idea should be described and in general, the same form is used for all ideas to be

inputted to the tool. If we examine for example the template used in Nokia's open idea platform IDEASPROJECT[1] illustrated in Figure 5 we can see that there are three mandatory fields, which all ideators need to fill in for each idea: subject of the idea, uniqueness of the idea and executive summary of the idea. Optional fields call for descriptions of the problem statement, solution description and relevant case studies. These are not specifically required, but it can be argued that the existence of these fields encourages the users to fill them in, or take these matters into account when writing the executive summary for the idea. This example represents a relatively concise format for idea definition. In contrast Galileo software presented in the study of Montoya-Weiss and O'Driscoll (2000) incorporates 3 sets of questions, each set representing a different phase of ideation process. First phase is concept definition, which includes a set of 10 questions (with sub-questions) addressing the perspective of the end-user, the organization, competition and technical implementation. When these are answered, ideator proceeds to the next phase, concept development which consists of a series of 12 more detailed questions (with subquestions). Final phase is idea rating, where the ideator evaluates his or her concept on 5-point Likert scale on 16 different dimensions (with sub-dimensions). In total this means a set of 38 questions with numerous sub-questions, representing a significantly more detailed form than the one used in IDEASPROJECT. These two examples represent well the variety of different solutions and approaches in idea management tools. More compact forms can be argued to be concerned with mainly the capturing of ideas, aiming to make the submission of ideas quick and undemanding. In contrast, the rationale behind the extensive set of questions incorporated in Galileo tool is that they spur the ideator to reflect on the idea from many different viewpoints thus not only capturing the idea but also supporting the creative process of the user (Montoya-Weiss and O'Driscoll 2000). Irrespective of how extensive the defined template is, this formalization of the idea form is argued to help the efforts of management and decision makers, stemming mainly from easier comparisons of different ideas as all submissions are structured similarly (Montoya-Weiss and O'Driscoll 2000).

[1] https://ideasproject.com, accessed 8.5.2013

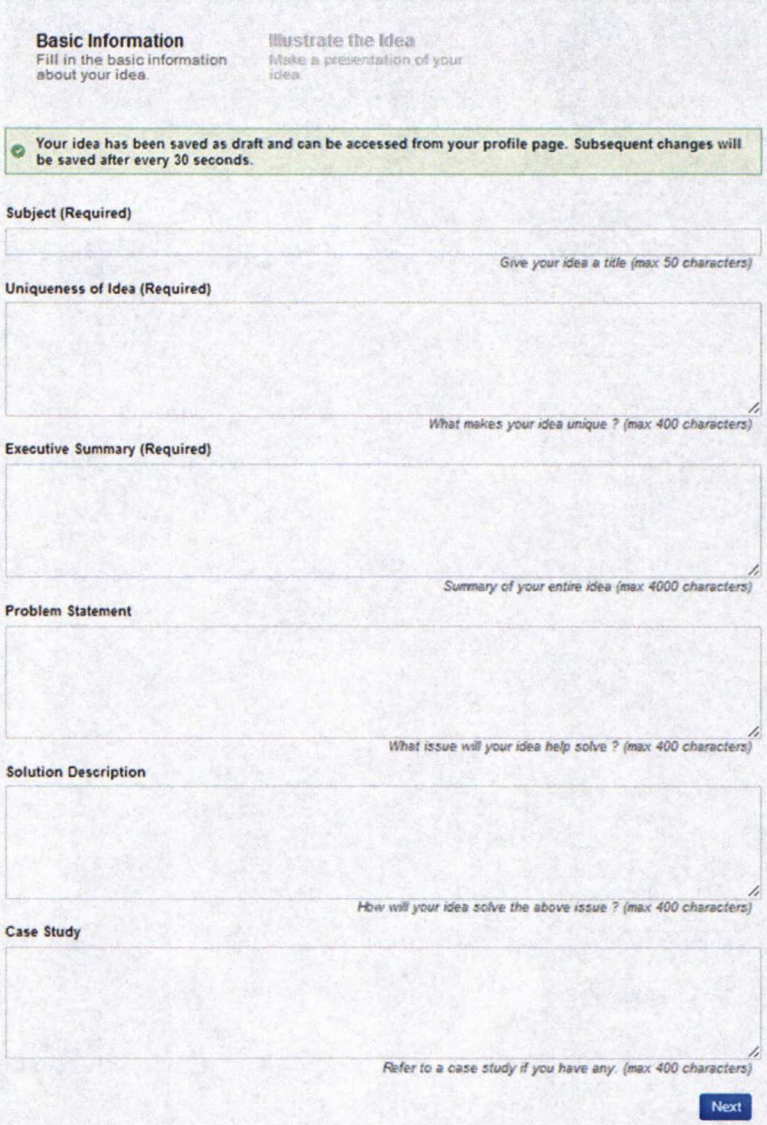

Figure 5: Screenshot from Nokia IDEASPROJECT [2] idea management tool

The second facet of formalization concerns the development process. Simultaneously with the idea management tool implementation a formal process model is created to define the activities to be undertaken between the submission of an idea and its "graduation" from the tool. Usually graduation means the stage where idea is formally accepted and transferred to the more extensive development project process of the organization (Montoya-Weiss and O'Driscoll 2000, Flynn et al. 2003). The process model aims to ensure that raw ideas are developed into clear and potent concepts and the best ones selected for further development (Flynn et al. 2003, Montoya-Weiss and O'Driscoll 2000, Bailey and Horvitz 2010). Main concern in previous research has been especially the organization of selection and decision making activities, regarding which a wide variety of different solutions have been presented. At Xerox, there is a separate assessment team assigned to

[2] https://ideasproject.com, accessed 8.5.2013

monitor a system and idea committees for each business center which hold meetings quarterly (van Dijk and van den Ende 2002). At Shell, a stage-gate inspired model with an internal venture capitalist panel is utilized (ibid.). When an employee submits an idea online, he is invited to present it to the panel. Accepted ideas receive funds for development and are later re-evaluated by a panel extended with new expert members. Ideas passing the second evaluation receive more funding and a pilot plan with further decision gates is generated (van Dijk and van den Ende 2002).

At Microsoft, use of idea management tool is organized around innovation challenges. Business units are requested for proposals for broader themes for which they are looking for solutions. The unit responsible for the idea management tool selects suitable proposals and organizes an idea competition around it utilizing the idea management tool. Employees can propose their solutions and idea tool team first generates a shortlist of from all submitted ideas generated. This is then narrowed down to half based on the opinions of business unit stakeholders. Prototypes are generated from selected ideas and based on their evaluation half of the ideas are developed further. Finally, a couple of ideas are selected as winners by the business area leaders sponsoring the challenge. (Bailey and Horvitz 2010) Similar idea competition and theme based approaches have also been utilized at BMW (Klein and Lechner 2009) and Xerox (van Dijk and van den Ende 2002).

Benefits of Idea Management Tools

The benefits of idea management systems are argued to reach all levels of the organization. From the perspective of the organization as a whole, they provide means to harness the mental capacity of the whole workforce (Montoya-Weiss and O'Driscoll 2000, Bailey and Horvitz 2010). Everybody can have great ideas, also outside of one's formal work, and idea management systems provide means to capture those ideas role (Bailey and Horvitz 2010). Ideas themselves are documented and stored so that going back to them is always possible, protecting them from *"falling between the cracks of operational life"* (Flynn et al. 2003, Cormican and O'Sullivan 2003). System also provides a neutral channel for ideas that for one reason or another would not be shared otherwise, increasing the total amount of ideas that are introduced to the organization (Soukhoroukova et al. 2010). Tools create an infrastructure that drives strategy into operational level, increases traceability and transparency of activities, facilitates the participation of all relevant stakeholders (production, marketing, customers etc.) and enables customer and requirement driven design if warranty and feedback information is integrated into the system (Cormican and O'Sullivan 2003). Idea management tools can also make possible new ways to generate ideas, as ideators are not restricted to face-to-face brainstorming and other traditional forms of collaboration when developing ideas collectively (Cormican and O'Sullivan 2003, Flynn et al. 2003)

From the perspective of the management, idea management tools provide a way for finding the needle from the haystack, that one great invention from the sea of less stellar ones. Usually the systems follow so called funnel model, where filters are used to separate the best ideas from the vast mass (Soukhoroukova et al. 2010, Montoya-Weiss and O'Driscoll 2000, Bailey and Horvitz 2010, Cormican and O'Sullivan 2003). The time required for the assessment of ideas is reduced by simplifying the comparisons of ideas by enforcing standard templates and decision criteria on all ideas (Montoya-Weiss and O'Driscoll 2000, Bailey and Horvitz 2010). This can also lead to the overall improvement in idea quality from the perspective of the organization, as ideators start to take the relevant criteria to account when generating their ideas. Also, assessment work can be outsourced, relieving workload of the management. One practice is to make ideators evaluate their ideas themselves (Montoya-Weiss and O'Driscoll 2000). A second approach which has been recently gaining ground is to exploit on the power of the user community. Users can give thumbs up for the ideas they find interesting, akin to Facebooks 'like' feature (Bailey and Horvitz 2010). There has also been some research on creating a virtual stock market around the ideas. Soukhoroukova et al. (2010) studied an idea management tool where users could buy stocks of their favorite ideas with virtual currency and selection decisions were based on how each idea fared in this 'idea market'. The results were promising, though no clear conclusions of benefits and challenges of the mechanism could be made.

In addition, idea management tools are perceived to bring direct benefits to the ideators themselves. Idea management tools provide a channel for the advancement of those ideas, which employees couldn't otherwise advance, helping them to release their creative urges which has a positive effect on motivation (Soukhoroukova et al. 2010). Also, different features can be used support individual thought processes. Functionalities that facilitate access to relevant information and carefully designed description templates can help ideators to focus their efforts on important aspects, for example how the idea links to the organizations strategy (Montoya-Weiss and O'Driscoll 2000, Flynn et al. 2003), technology related issues (Montoya-Weiss and O'Driscoll 2000), perspective of the user (Cormican and O'Sullivan 2003) and markets and business aspects (Montoya-Weiss and O'Driscoll 2000). In 'Creations' tool studied by Flynn et al. (2003) users were able to input inspirational material, which all ideators could access and utilize as raw materials in their own ideation. Another way of providing support is to utilize the user community. The whole crowd can be given the ability to comment each idea posted in the tool so that ideator can receive insight from different viewpoints and suggestions for refinement and future development for his idea (Bailey and Horvitz 2010). In a way, idea management tools share some similarities with social media applications. Kaplan & Haenlein (2010) define social media as *"a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow*

the creation and exchange of user-generated content". Idea management tools can be seen as such applications since they are based on the idea that the user community openly shares various self-created content in the form of ideas, comments and votes. Especially recent studies have emphasized the role of user community as major source of benefits (Bailey and Horvitz 2010, Soukhoroukova et al. 2010).

Use of Idea Management Tools

How the systems should be introduced to the organization is not widely discussed in idea management system literature. Van Dijk and van den Ende (2001) emphasize the importance of communicating company strategy, incentive design, transparency in evaluation processes and compatibility with organizational context. They argue that processing of ideas needs to be carefully planned, or users' motivation to input ideas will suffer. They also acknowledge the effect of past experiences on the willingness to use the system in the future. What is most notable however, that studies of the effects of idea management tool implementations are sparse. Study of Bailey and Horvitz (2010) revealed that in an idea management tool organized around innovation challenges and open platform, most contributors only voted on ideas. The threshold for commenting and posting ideas was significantly larger, posting being the least enacted activity. Users reported that generally ideas came from outside the formal job domain, as there already was existing channels for those ideas. Another interesting finding was that most active users were the ones who were furthest away from decision makers. User interviews indicated that main motivation for posting ideas stemmed from the possibility that idea is realized and getting one's voice heard over organizational silos. Those whose idea got selected and got to act as project leaders during prototype development reported learning new skills and gaining experience. Main barrier for use regarding ideators was seen to be lack of clear incentive arrangements, as there were no explicit rewards for contributions, even if idea was selected to further development. Bailey and Horvitz (2010) However, study by Klein and Lechner (2009) found that management blessing encouraged and motivated active users more than the possibility to win prizes (such as holiday vouchers). In-active users listed lack of time as the main reason for non-use (Klein and Lechner 2009). Mapping reward arrangements at other companies, van Dijk and van den Ende (2002) noted that at Xerox, business units hand out small rewards for each posted idea, regardless of whether or not it is implemented. In contrast, at Shell no rewards are issued even for ideas ending up being implemented (van Dijk and van den Ende 2002). Despite the difference, both companies run very successful idea generation processes (van Dijk and van den Ende 2002).

Contemplating idea management tool research in general, general consensus seems to be that idea management tools and design decisions regarding them are perceived to have direct effect on outcomes of creative processes, perceptions about the system and its adoption (Bailey and Horvitz

2010, Montoya-Weiss and O'Driscoll 2000, Flynn et al. 2003). What is aspired is loose formalization of the idea generation and development process, where a proper balance between nurturing creativity and effective management is achieved (Flynn et al. 2003, Montoya-Weiss and O'Driscoll 2000). Of the reviewed studies, only Bailey and Horvitz (2010) and Klein and Lechner (2009) had empirical parts which discussed the actual consequences of idea management tool adoption. It seems that very little is actually known about how idea management tools manage support innovation efforts on the grassroots level and what kind of challenges and problems are linked to their utilization from the perspective of users, managers and the organization.

2.3 Innovation Practices

The research on supporting innovation presented in previous chapters, has generally adopted a rather mechanistic view of the world. Well-designed support mechanisms are seen to steer the actions of employees so that development work is done in the best possible way. The features and functionalities of idea management systems are seen to direct people focus effort on the ideas relevant to the company and take account market related and technical issues (Montoya-Weiss and O'Driscoll 2000). Process models enforce systematical and measurable development work leading to efficient and successful realization of ideas (Cooper 1994, Khurana and Rosenthal 1998). But is this really true? Loch's (2000) results discussed earlier indicate that even if there is a process model specified, it doesn't actually mean that it is followed. Lempiälä (2011) found out that many intended support arrangements do not really help individuals in their innovation efforts, sometimes even inhibiting activities. This begs to question whether the model of homo sociologicus, idea of employees conforming to the system of normative rules and expectations of their environment (Reckwitz 2002) is a reasonable way to approach organizations. Process model such as stage-gate represents clear explicit rules for behavior, but in reality it's perceived ineffective and ignored. One alternative is proposed by practice theory, which is based on the idea that social structure, be it on the level of society or organizations is created by social practices (Reckwitz 2002). As an approach it has been gaining ground in a variety of different management research fields like strategy (Jarzabkowski 2005), knowledge management (Styhre 2003, Gherardi and Nicolini 2000), innovation management (Lempiälä 2011, Garud and al. 2011) and technology studies (Orlikowski 2000, Boudreau and Robey 2005).

Practice is defined by Reckwitz (2002) as *"routinized type of behavior, which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, "things" and their use, background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge"*. To illustrate the idea, let us examine the practice of cycling. First of all, there are the bodily activities like spinning the cranks to create propulsion or turning the handlebar to steer. There are material things, like the bike itself and the road or other surface it's

ridden on. There's background knowledge like understanding the traffic regulations, know-how like increasing pedaling power by standing up, emotional knowledge like sense of hurry and motivational knowledge like getting to work on time. All these elements influence the enactment of practice and it's the complete constellation that ends up defining the practice as it takes place. All the elements, even those traditionally seen as dichotomous such as body and mind or human and non-human are seen as inherently entangled with each other (Feldman and Orlikowski 2011). What body does has an integral connection to activities of the mind, be it analytical like interpreting the behavior of other road users or even emotional, like riding more aggressively when frustrated. Similarly, as the elements constituting practices are inherently intertwined, so are the practices themselves (Shatzki 2006)

The definition of Reckwitz (2002) does quite little to emphasize the social side of practices. Underlining this aspect more clearly is Shatzki (2006) when proposing that practices are *"Embodied, materially mediated arrays of human activity centrally organized around shared practical understanding"*. The practice of cycling is not inherent to the individual but to a community. There's a clear shared understanding about for example the bodily motions involved in cycling: one pedals with feet and faces the road, not with hands, sitting backwards. As Reckwitz (2002) argues, both the bodily and mental routines *"are the place of the social"*. He presents an example from football. The goal of winning the game is not just an individual personal trait but inherent to the social practice of playing football. This is not to say that every single person playing football wants to first and foremost win the game, but that practice theoretical approach is interested about shared social practices larger than the specific activities of a single individual.

Also, even if some individuals might play primarily for reasons besides winning, they are still aware that the common objective in football is to beat the other team.

An important assumption of practice theoretical approach, hidden from both definitions of Reckwitz (2002) and Schatzki (2006) is the consequentiality of practices (Feldman and Orlikowski 2011). When practicing football you at the same time draw upon the previous enactments and create the basis for the future ones. It is also important to note that routines to which Reckwitz (2002) refers do not carry the same meaning in this context as usually in management studies or layman's terms. Routinized does not refer that all these practices and thus social structures remain static by default, more that they consists of elements characterized with certain unconsciousness. Practice theoretical approach implies that the structures are evolving constantly as each enactment of a practice has the potential to differ from those before it (Orlikowski 2000). Similarly, Reckwitz (2002) underlines the temporality of structures. This view is well illustrated with the approach of Orlikowski (2000) on software. According to her a piece of software by itself doesn't contain any structures at all. It is only when the software is used that it together with other elements making up

the practice of the use of the software that a structure exists. This is not to say that practices can't be rigid. With time practices can institutionalize, become so unconscious that their sensibility is never questioned. Still, even then there always exists the possibility to act otherwise (Orlikowski 2000). This raises the question of when do actually practices change then? Reckwitz (2002) talks about crises occurring in routines when actors face situations where the routine doesn't fit. Orlikowski (2000) adopts a more positive perspective indicating change in awareness, knowledge, power, motivation, time, circumstances or technology as potential factors for change, but emphasizes the role of human actor as the change agent.

2.3.1 The Practice of Innovation

So what are the implications of practice theoretical approach in organization science, especially concerning the study of innovations? In strategy research it has meant approaching strategy more as something company does instead of a management exercise conducted from time to time (Jarzabkowski 2005). In knowledge management the traditional division of tacit and explicit knowledge has been challenged with the idea of knowing as an ongoing social accomplishment more than an individual trait (Styhre 2003). In innovation research, it has steered attention to the nuances and uniqueness of actual development work on the grassroots level challenging the pursuit and emphasis of ideal codes of conduct (Lempiälä 2011, Garud et al. 2011).

Taking a step back, explaining how these conclusions are reached, let's examine how practice research sees organizations. According to Shatzki (2006) *"organization, like any social phenomenon is a bundle of practices and material arrangements"*. To caricaturize, practices refer to what people do and material arrangements refer to the physical objects linked to it, be it buildings, computers, factory equipment or whatever, appreciating intertwined nature of the two. Following the argumentation of Reckwitz (2002) regarding the relationship of practices and individual, a single organization, or the individual can be seen as a *"unique crossing point of practices"*, depending of course on the level of examination.

Innovation processes are linked with a vast number of organizational practices. There are practices for sharing ideas, decision making practices, project management practices, championing practices, practices for gathering new information and so on. Innovation and practices related to it are inherently interconnected with all the other operations of the enterprise and imposing organizational barriers between development and "normal" operations poses challenges on the first mentioned (Dougherty and Hardy 1996). Idea generation is not limited to research laboratory activities and can initiated by a customer interaction occasion, challenges faced during daily job routines and other seemingly mundane activities (Brown and Duguid 1991).

The prevalent notion of innovation driven by single genius has been questioned by a variety of authors, who have stressed collective nature of innovation processes (Lempiälä 2011, Hardagon and Bechky 2006, Brown and Duguid 1991). As such innovation is subjected to the challenges of teamwork. Carlile (2002) argues that a common language is required so that shared understanding can be generated and existing knowledge transformed. Dougherty (1992) has noted that working especially over unit boundaries can be challenging, as each unit represents a distinct thought world, from which its members have difficulties in detaching oneself. Material artifacts such as technical drawings or prototypes can have an important role in bridging different perspectives, though their capacity to solve issues is always case-specific, i.e. the same artifact can be a solution in one meeting and the source of the problem in another (Carlile 2002). While some research has painted collaboration as a relatively organized activity, where relationships are formed and support sought based on required expertise or power (Koch and Leitner 2008), Lempiälä (2011) observed that collaboration practices are largely spontaneous and stress *"immediate and convenient availability"*. Advice is also usually sought in the informal arenas of organizations, like coffee rooms and hallway conversations (Hardagon and Bechky 2006, Lempiälä 2011).

Van de Ven et al. (1999) have identified the shared characteristics of innovation processes highlighting the inherent uncertainty ever present innovation efforts, which can at times lead to chains of events that almost appear random. Related to this, Dougherty and Hardy (1996) argue based on their empirical observations that decision making and other central activities governing innovation processes should not always follow standard routines and there should be room to act otherwise and prioritize differently when required. The problem is that generally, normal organizational practices do not allow this and even prevent new practices from forming especially in large and mature organizations (Dougherty and Hardy 1996). Dougherty and Heller (1994) noted that existing practices of the organization formed barriers for experimentation and learning activities which ideators would have needed to carry out to develop their design further. Failed tests were seen as fiascos by the management, instead of learning experiences leading into much needed new insight. Enacting exploratory practices is crucial to the success of innovation efforts, as they help linking market and technology related information to solutions in development (Dougherty and Heller 1994).

Dougherty and Heller (1994) found when an idea doesn't fit existing business lines of the organization, it has problems in tapping into authority or communication structures, which leads to difficulties in accessing resources of the organization. When similar tensions between organizational arrangements and innovation practices of idea developers occur, it does not mean that efforts are automatically halted. Studying development at 3M, Garud et al. (2011) noted several different ways how ideators bypassed different formal arrangements. During hiring freeze

innovators hired extra help by disguising payments as material expenditures. Also, in a situation where sales department was not convinced on the idea, innovators undertook selling efforts by themselves in order to not let that prevent their further development. (Garud et al. 2011). Others have made empirical observations where ideas are hidden from the formal organization in order to protect them (Koch and Leitner 2008, Lempiälä 2011). Going undercover however is not the only solution to challenges where official support for creative endeavors proves out to be difficult. Dougherty and Heller (1994) noted ideators enacting practices, where they reframed their more innovative solution as simpler extensions to current production lines thus legitimizing their efforts in the eyes of the organization.

Challenges regarding existing ways to work in organizations are not limited only to arrangements which are designed to primarily with non-innovative activity in mind. Researching innovation practices on more micro level than Van de Ven et al. (1999), Garud et al. (2011) or Dougherty and Hardy (1996), Lempiälä (2011) has shown how even arrangements specifically designed to support innovation, might actually hinder the work of innovators. This is because tools like formal process models try to impose the ideals of normal operations like reducing ambiguity and iteration to activities where those elements are ever present, creating a gap between the tools and actual practice (Lempiälä 2011). One identified strategy for ideators to respond to such challenges is to redefine the purpose of formal arrangements so that they better serve the needs of the ideators. Van de Ven et al. (1999) noted how project plans were consciously used merely as sales vehicles, instead of frames for organizing future activities, for which they were originally intended.

2.3.2 Practice Theoretical Approach to ICT use

Since the 1990s, practice theoretical approach has been increasingly utilized in technology research in organizational settings (Orlikowski 1992, 2000, Lynne-Markus 1994, De Sanctis and Poole 1994, Hayes and Walsham 2001, Boudreau and Robey 2005). Technologies such as e-mail, telephones, copy machines are instrumental for an increasing variety of different work tasks. There are different viewpoints however on what actually is the role and effect of technology on the behavior of organizational members and thus its operations as a whole. This section presents two differing viewpoints on to what extent do the properties of some specific technology affect the way it is used by users. First, technology-centric perspective is introduced, which emphasizes the role of technological factors when attempting to induce change in human behavior. Next, practice theoretical approach is presented, which stresses the role of social processes when utilizing and implementing technology. Finally, a practice theoretical research frame proposed by Orlikowski (2000) is presented which will be used in the empirical part of this study.

The technology-centric school of thought represents the traditional approach to technology in organizations. In essence, it sees technology as having direct and independent effects on the behavior of organizational members. The central assumption behind the perspective is that technologies contain embedded rules and structures, which limit the choices for action that human actors have available (Huber 1991). The fact that relationship between technology and user is seen as one-way only, implies that these structures remain stable throughout the lifespan of the technology. Let's imagine an organization that gathers ideas from employees with an idea management tool and an employee who comes up with an idea he wants to share. When entering the idea, the employee has to fill-in a predefined form with predefined questions about potential markets etc. Technology-centric perspective sees this predefined structure effectively as an active constraint defining the actions available for the employee to perform thus guiding the behavior of the user. If the submission form includes a question addressing the fit of the idea to the company business strategy, this makes the ideator to take strategy into account when generating new ideas. If the structure of information systems, meaning data and decision models such as idea submission forms match the insufficiencies of human actors, productivity and efficiency will rise, leading also to improved well-being at the office (DeSanctis and Poole 1994). In essence, change in organizational operations can be achieved by implementing new technologies, which give the right kind of help and guidance to the user.

A good example of technology-centric thinking is the media richness theory (Daft and Legnel 1984) which has been used to examining communication media use and selection in organizations. Its key point is that in order to perform efficiently, organizations and their members need to think about communication and always try to match the processing requirements of a message with the medium that the message will be distributed with (Lynne-Markus 1994). Whether or not a medium is suitable is determined by its embedded properties, like ability to transmit multiple cues, feedback at the right time, richness in language etc. (Lynne-Markus 1994) So for example when trying to communicate about ambiguous issues, rational actor prefers face-to-face communication over e-mail as processing ambiguous information greatly benefits from larger amount of cues and richer language which face-to-face communication as a medium enables.

Since the early 90s, the technology-centric view has come under significant criticism as empirical studies of technology use started indicating that how technologies are used and what kind of benefits they bring is a much more complex phenomena. Regarding the previous example of media richness theory, empirical findings have indicated that actually decisions on which media to use for communication are in many ways affected by social aspects, like desire to act similarly to others (Lynne Markus 1994). In the same vein, Orlikowski (2000) found that the same piece of software was used in very different ways inside the same organization in different divisions. Empirical

observations such as these question the importance of technological features in affecting human behavior. This line of thinking has bred a group of new theories and models for explaining what kinds of factors constitute practices of ICT use. Many of these theories built upon so called structuration theory introduced by Anthony Giddens (1984), a notable framework in practice theory. Orlikowski (1992) writes:

> *"Structuration is posited as a social process that involves the reciprocal interaction of human actors and structural features of organizations. - - In Giddens' framework, structure is understood paradigmatically, that is, as a generic concept that is only manifested in the structural properties of social systems (Giddens 1979, pp. 64-65)). Structural properties consist of the rules and resources that human agents use in their everyday interaction. There rules and resources mediate human action, while at the same time they are reaffirmed through being used by human actors"*

Here technology is seen as a resource, with properties that as a whole mediate behavior but only through the discretion of the actors (Boudreau and Robey 2005). Differing opinions on the nature of technological structures and properties have been proposed. DeSanctis and Poole (1994) follow so-called soft-line determinism, which in line with technology centric perspective implies that technologies contain fixed social structures, but sees that social practices moderate their effect on human behavior. Departing a bit further, Orlikowski (2000), following the thoughts of Giddens (1979, 1984), who stated that all structures have only virtual existence, argued that in fact technology cannot contain embedded structures, as no rules or resources exist if the technology is not used. Orlikowski (2000) named this new framework as the "practice lens", perhaps underlining the more coherent relationship between the redefined model and general practice theory. It is important to note that this does not imply that the properties of technology do not play any type of role regarding what kind of practices are formed around it. Simply, the material and symbolic properties of a technology are seen only as potential structuring elements instead of actual structures. An idea submission form which asks about idea's fit to company strategy might encourage the user to think about such aspects while generating ideas, but does not guarantee it. It also isn't given that the effect is as expected. It could be that instead of generating ideas matching company strategy, users are discouraged as they see strategy as ambiguous and have troubles taking it into account during their creative endeavors.

As practice theoretical approach questions the power and even the existence of embedded structures in technology, it also implies that technology is not seen as fixed entity but interpretively flexible, using the term proposed by Pinch and Bijker (1987). Orlikowski (1992) argues that since technology is inherently a product of human agency, human actors have the ability to modify

technology physically and socially at any point of its lifespan. However, this view does not imply that any technology can be used to whatever purpose. The properties of the artifact do pose certain constraints on how a technology can be used, the rule of thumb being that the more abstract and conceptual a technology is the more flexibility in adaptation is possible (Orlikowski 2000). A brainstorming technique is more flexible than a personal computer, which is more flexible than an ATM machine. The degree of flexibility is dependent on the characteristics of technology as a material artifact, characteristics of the user and those of the context (Orlikowski 1992). The central idea here is simply that be the technological object in focus a smartphone or a control board for a nuclear power plant, alternative practices than those envisioned by the designers regarding the use of the object always exists.

Regardless of differing views on whether technologies contain stable structures or not, most ICT practice theorist share the same opinion on the recursive nature of practices (Orlikowski 1992, 2000; Boudreau and Robey 2005, DeSanctis and Poole 1994). Recursiveness means that every time a practice is applied the output of the act becomes a new source of practice. If a project team normally distributes paper memos, every time a team member sends his memo to others in paper form this code of conduct is strengthened. This makes the idea of acting in some other way ever more distant. However, if somebody does break the habit and sends his memo electronically, it might prompt others to follow suite, though it does not ensure it. The larger the variety of different practices one gets exposed to, the more probable enacting differing practices becomes (Orlikowski 2000). Recursiveness can also be seen as one of the reasons why technologies are seen as rigid entities. As a user community uses some technology in one way for a long period of time, it might lead to a situation where the understanding that the technology cannot be changed is distributed and in the end shared throughout the community. It is important to note that this is caused by a social process, not by any features of the technology itself (Orlikowski 2000). How technology is used is not dependent solely on the technology nor individual user, but the larger community surrounding the practices.

For the examination of technology in organizations, Orlikowski (2000) has proposed a research frame which highlights three crucial aspects for understanding the constituting elements of technology related practices and three elements for examining the effects of those practices in a situation where some new technology is introduced to an organization. This frame is now presented here, as a slightly modified version of it will be followed in the empirical part of this study.

The constitution of practices is based on three conditions which create the backdrop for the interaction with technology: institutional, interpretive and technological conditions. Institutional

conditions refer to the *"social structures (normative and authoritative) that constitute part of the larger social system within which users work"* (Orlikowski 2000). These structures can be formal or informal, like incentive arrangements used in the organization or the unofficial pecking order of the coffee room. Interpretive conditions deal with the assumptions, expectations and other shared understandings regarding especially the technology in focus (Orlikowski 2000). These relate to matters like the purpose of the technology (for what is it useful for), etiquette (appropriate ways of use) and use related know-how. Here it is crucial to highlight the collective aspects of interpretive processes. Assumptions are not only formed individually but are also affected by the opinions of other community members. Technological conditions refer to the symbolic and material properties of the technology in focus (Orlikowski 2000). Using a piece of software as an example, symbolic properties denote aspects like visual design and material properties to keyboard or display instrumental in the use of the system. All these conditions can be argued to be inherently intertwined. The physical design (technological condition) of a smartphone can affect the assumptions one forms regarding its use. Colorful plastic casing gives the impression of a cheap toy where as subtle colors and use of real metal evoke professional feel.

Similarly the consequences of the practice which is formed around a technology can be divided into three parts: processual, technological and structural consequences. Processual consequences refer to changes in how users conduct their work tasks and the end results of those tasks (Orlikowski 2000). For example groupware software might lead to increased collaboration between team members and more holistic end results. Technological consequences refer to changes in the technology, be it to the features of the technology or data related to it (Orlikowski 2000). Realizing that smartphone can be used as a camera is a change in available features and each idea or comment submitted to an idea management tool represents a change in data. Both these represent a change in the technological properties that are available for users when they are interacting with the technology. Finally, structural consequences refer to the change in the social structures in the surrounding community. Some authors have argued that social media applications can effectively flatten organizational hierarchy (DiMicco et al. 2008).

Though practice theoretical approach hasn't really been utilized for idea management tool research as of yet, many interesting findings have been made in studies of other types of software. While they do not describe practices surrounding idea management tools, they give interesting cues on the factors which are instrumental in the formation of practices around ICT applications regardless of what the software is designed to support. Boudreau and Robey (2005) examined an ERP (Enterprise Resource Planning) system implementation in a large governmental organization. They noted that even though the implementation project was carried out carefully and users were initially excited about the system, the expected practices did not emerge as users lacked knowledge and

skills for actually operating the system and were reluctant to spend the required effort to learn them. Interestingly however, users' ability to adapt was not limited to how to avoid the use or minimize change to original work practices, as also novel practices on how to distribute technology know-how were generated when they were forced to start using the system.

Studying managers' use of e-mail, Lynne-Markus (1994) discovered that the effectiveness of e-mail in the case organization stemmed from the fact that people read them frequently and answered quickly, not from the technology itself. If e-mail practices would have been similar to regular mail which were reviewed once a day, e-mail wouldn't have been nearly as effective. Also, users were able to circumvent deficiencies of technology by adopting compensating practices. Case company's e-mail system made involving several people in virtual conversations cumbersome, but users worked around the problem by creative use of forwarding feature. Orlikowski (2000) found that in one division of her case organization, implementation of a groupware system lead to increased collaboration and knowledge sharing. However, in another division, where culture was more competitive and possessing unique knowledge was seen as crucial asset for career advancement, the same piece of software was not used at all. The shared understandings and assumptions regarding the technology and social structures had a significant effect on practices. Hayes and Walsham (2001) noted how even inside same business units, there can be large differences between practices. Examining a groupware implementation inside a sales team, they noted that as workers' performance reviews were tied to the use of the system, some users adopted a practice of over-active use which didn't actually contribute to overall productivity. Others formed a practice, where they spent the least amount of time using the system, without compromising their bonuses. They knew that management only looked at the number of entries to databases, not the actual content that was inputted, and thus simply added empty entries in order to appear active. The over-active use of the majority made these people question the utility of the system.

These above-mentioned empirical observations illustrate nicely both the users' ability to adapt and create practices that match their needs and also, how not only the elements constituting the practice but the practices themselves are inherently intertwined. In the study of Hayes and Walsham (2001) the performance evaluation practices of management played a significant role in defining how users ended up using the system. Users can exercise their discretion on how to use the system in major ways, finding different ways to work around the alleged constraints of the system. All these findings seriously question the view of technology-centric studies, which emphasize the design of the technology and its implementation process as the success factors for creating organizational change through information system adoption. The findings of these studies imply that when developing and implementing technology in organizations, focus should be changed from technological features to a more holistic approach, which appreciates the numerous other matters

influencing the practices surrounding the technology (Orlikowski 1992, 2000; Lynne-Markus 1994, Boudreau and Robey 2005). Technology is just one piece in the puzzle. It is the intertwined triangle of the user, the technology in question as well as the organizational context that shape practices (Orlikowski 2000).

2.4 Summary of the Literature Review

Most central observation from the literature review is the relatively large gap between research on innovation support arrangements and practice research. Research on both formal process models for innovation and idea management tools seems to mostly follow the technology centric theoretical approach, i.e. it is presumed that with these instruments it possible to directly and predictably affect the behavior of the members of an organization (Cooper 1994, Khurana and Rosenthal 1998, Montoya-Weiss and O'Driscoll 2000, Cormican and O'Sullivan 2003). Both streams also see measures which aim to increased systemization and reducing ambiguity as key elements in ensuring successfulness of innovation efforts. However, innovation practice research stresses that uncertainty is an inherent characteristic in innovation processes (Van de Ven et al. 1999). Empirical studies have questioned the sensibility of trying to impose ideals of predictability and risk-avoidance on innovation efforts through adoption of tools such as process models since they are contradictory with the very nature of innovation (Dougherty and Hardy 1996). It has been noted that tools are at times consciously avoided (Koch and Leitner 2010), ignored (Garud et al. 2011) and redefined (Garud et al. 2011) by innovators while they advance their ideas in the organization. Research on both innovation practices and practices of ICT use both emphasize the crucial role of organizational context in the constitution of practices around different types of tools and warn against excessive focus on technical aspects when designing mechanisms for supporting grassroots activities (Orlikowski 2000, Garud et al. 2011). It is important to note that there are also similarities between innovation practice research and general innovation research. For example the crucial task of linking ideas to company strategy discussed by Dougherty and Hardy (1996) has also been emphasized in process model studies (Cooper 1994, Khurana and Rosenthal 1998) and studies on idea management tools (Montoya-Weiss and O'Driscoll 2000, Flynn et al. 2003). It is unclear however to which extent do the mechanisms proposed by process model and idea management tool literature for addressing the issue actual solve the problem.

Research on collaboration during idea development has underlined spontaneity and the role of informal arenas in interaction (Hardagon and Bechky 2006, Lempiälä 2011). Discussions often arise ad-hoc, face-to-face interaction is favored and advice is sought from people who are familiar and available instead of systematic efforts to tap into highest possible expertise (Lempiälä 2011). Such findings seriously question the suitability of idea management tools in supporting idea development. Ideator cannot be sure when other users will comment the idea or if any feedback is

given at all. Also, though modern social collaboration platforms have been noted suitable for informal communication (DiMicco et al. 2008), the fact that in such systems by default most messages are visible to all users indefinitely is somewhat at odds with the ideal of confidentiality. As empirical research on the actual use of idea management systems has been scarce as of yet, very little is known on how these tensions appear in organizational life. Based on examinations of other types of software applications, it is reasonable to suspect that support of ICT tools in innovation efforts is more complex phenomenon than portrayed in mostly mechanistic idea management tool research. As Boudreay and Robey (2005) conclude their study: *"the best practical implication that can be drawn from this study is that users are likely to enact information technology applications in ways that are neither predictable nor easy to control".*

Summing up, there seems to be significant inconsistencies between idea management tool and innovation and ICT practice literature regarding the benefits of idea management tools. More research is needed on how idea management tools actually manage to support innovation efforts of individual employees, management and organization as a whole. Also required is understanding on how different contextual factors are related to the constitution of specific ways to utilize idea management tools. For the purposes of generating new knowledge regarding these topics, the following chapters present findings from a single case study of idea management tool adoption in a service organization.

3 Research Material and Methods

The empirical part of the present research is formed by a qualitative single case study. There were several reasons why this approach was selected. As the motive behind the study was to increase understanding about how idea management tools support innovation efforts at the grassroots level, this required understanding about not only on for what kind of activities the tool is utilized, but also why is it utilized in these ways. Compared to quantitative research methods, qualitative approach gives better means to understand the perspective of the actors in focus and the context where activities are enacted (Bryman 1989). This is crucial for gaining understanding about the factors behind the behavior of different users. These same reasons also advocated for conducting a case-study. According to Yin (2009), case-studies are especially suitable for studies focused on answering explorative "How?" and "Why?" questions in situations where the course of events is unpredictable and focus is on phenomenon taking place in a real life context. Both unpredictability and real life context are very much the case when it comes to idea management tool adoption.

Selection of qualitative methods was also spurred on by access to data in the case organization. The possibility to conduct nearly 20 interviews in different hierarchical levels and divisions, access to both activity logs and the content inputted by the users of the idea management tool over a significant period of time as well as access to a variety of design related and communicational documents constituted a rich dataset offering extensive possibilities for qualitative analysis and triangulation. Also, as qualitative methods do not require as rigorous commitment to predefined research frame compared to quantitative approaches (Bryman 1989), it was suitable for conducting research on topics on which the existing literature was relatively narrow as was the case with idea management tools. The objective of as in depth examination of the practices around idea management tool as possible constrained the study to a single case, as the available research capacity would have only sufficed to a significantly more superficial examination if there would have been multiple cases. All these reasons contributed to deciding on a qualitative single case study.

The main research questions for this study are as follows:

1. What kind of practices form around the adopted idea management system?
2. What kinds of factors are related to the constitution of the practices?

The data collection and analysis were conducted as a part of a larger research effort which examined how an initiative aiming to boost innovative culture managed to democratize innovation efforts in the case organization. The project as a whole was funded by Tekes and undertaken by author and a senior post-doc researcher at Innovation Management Institute of Aalto University's

Department of Industrial Engineering and Management. The research project was led by the post-doc researcher. The innovation initiative is described in depth in chapter 4.1.

The case company was selected for two main reasons. First, they had recently adopted an idea management tool and were committed in utilizing it throughout the organization and promoting its use. By the time the research was started, the system had already been in place for four months and it was used actively by the employees. Use had already been became established meaning that it was possible to study the practices related to the tool, instead of just assumptions and expectations regarding the use. It also made possible to follow the stabilization of the use, as the first excitement and honeymoon phase with the new application had already passed. Second important factor was the fact that the case organization was willing to provide rich access to informants and data. The possibility to conduct interviews with different employee groups and acquire activity logs from the idea management tool itself meant that it was possible to examine practices from different user groups and also the conditions that constituted those practices from supplementary perspectives.

For the purpose of the study, 19 informants were interviewed during May 2012. 6 Interviewees were conducted by both author and post-doc researcher, 7 by the author and 6 by the post-doc researcher. Interviews were semi-structured and lasted between 1-2h. All interviews were recorded and the recordings transcribed. There were three groups of informants: (1) Management, consisting of the innovation manager and the head coach (n=2); (2) Innovation coaches, consisting of all innovation coaches of the organization (n=7). Each coach was responsible for facilitating idea generation and development in different business areas. For each idea posted in the system a single innovation coach was as a mentor, which indicated formal responsibility in helping the ideator in hands-on advancing the idea; (3) Employees, consisting of experts from different business areas (n=10). Half of the employees had been active and half passive users of the idea management tool or other parts of the innovation initiative. This was done to avoid skewing of the results to describe only a part of the larger organization. 6 of the people interviewed were from the ICT division of the organization, 4 from business divisions. The amount of active and passive users in both subgroups was equal.

Informants representing regular users of the system were selected through a three-step process. First researchers generated a frame for desired informant profiles. It was agreed that sample should include a roughly equal amount of active and non-active users of the system and that there should be a representation from as many different parts of the organization as possible. This specification was sent to the innovation head coach, who acted as the corporate contact person of the research project, and based on the frame she compiled a list of potential candidates. These persons were first approached by one of the innovation coaches via e-mail, saying that the recipient has been selected

as a potential informant and that participation is voluntary. Research project was also briefly described and management blessing of the efforts mentioned. After this, the candidates were approached for permission to be interviewed. Two of the 12 people declined. There was no selection process for the management and innovation coach interviews, since it was agreed that both two managers responsible for the new innovation efforts and all of the innovation coaches should be interviewed. Purpose of the management interviews was to gain insight on the management expectations and experiences regarding the idea management tool and innovation efforts in general. These interviews were also treated as windows to the views of the top management. Regarding innovation coaches, it was seen that because of their central hands-on role in the system as facilitators all seven of them should be interviewed. Since they represented different business units, it would also make reflecting differences in practices between different parts of the organization possible.

The interviews were designed to gain understanding of informants' expectations and assumptions regarding organizations innovation activities and the innovation initiative, especially the idea management tool. Also in focus were the innovation practices of the interviewee and the larger organization. These were probed by examining recent and ongoing innovation processes where the informant had had a central role. Events of the case were probed with questions such as where did idea originate, how, to whom and when was it shared, what kind of roles other parties acted etc. These stories acted as a window to individuals own practices and the practices of the larger organization. Several informants described more than one case and there were multiple innovation processes where researchers were able to get accounts from several informants on the same case from their own respective viewpoints. Interviews were semi-structured. There was a certain set of basic questions that were asked from each informant, but depending on the cases that informant described, the focus areas of the interviews varied a little. For instance some people depicted cases where idea management tool was utilized and others such where it wasn't, so naturally the amount of information related the tool was different between these interviews. This doesn't imply that some interviews were more complete than others, as different accounts helped in forming a complete picture of development efforts.

A second major data source was a perfect duplicate of database data from the idea management tool, which had accumulated during the use of the system. With the data was possible to examine the full descriptions of every idea that had been posted to the system and complete details of comments, votes and evaluations each idea had received from all the different users. It was also possible to investigate when and by whom each idea, comment, vote or any other type of contribution was made. In essence this data set formed a set of digital footprints for all activities that had been performed in the tool meaning who (user) did what (content of the contribution) and

when (timestamp). Database data spanned from the launch of the tool in mid-October 2011 to early November 2012. During this time 490 ideas and 2602 comments had been posted to the system.

Several different tools were used for investigating the data. HeidiSQL software was used for viewing the content of all database tables in their raw form. Using HeidiSQL, raw data was also exported to Microsoft Excel for quantitative analysis. A simplistic user interface resembling the user interface of the actual idea management tool used in the case organization was created using Django framework so that each idea and the course of activities related to it were easier to examine. This application included the following views and functionalities:

- A list of all ideas
- List of all ideators
- Discussion thread –like view of each idea which consisted of the description of the idea, all comments (in chronological order) and private messages that mentors had sent and answers received regarding it, which business line the idea belonged to, ideator, mentor of the idea, when the idea was published, tags related the idea and it's status.
- Profile view for each ideators, which consisted of a list of all ideas that the person had put into the system.

Interview and database data were complemented with analysis of different documents related to the innovation initiative. First there were documents related to the design phase of the initiative. These were mostly presentation slides and included information about the innovation strategy of the case organization and details regarding the initiative such as implementation plans, schedule, responsibilities, evaluation, goals etc. Second group of documents were of informative and public relations purposes. These consisted of among others texts promoting and reporting the initiative in the company newsletter, slides from the launch of the initiative etc. In total the data included 380 presentation slides and 22 A4 pages of rich text documents.

3.1 Data Analysis in General

This section describes the process and methods used when analyzing different data for the purposes of this study. First, the process for interview data is presented followed by details regarding the analysis of data gathered from the idea management tool and finally approach used in document analysis. The data analysis was inspired by grounded theory (Charmaz 2000) and systematic combining (Dubois and Gadde 2002) approaches to qualitative research. Both approaches emphasize the importance of iterative analysis, where researcher goes back and forth between theoretical concepts and empirical observations (Charmaz 2000, Dubois and Gadde 2002). In systematic combining and grounded theory, analysis is first and foremost guided by the empirical findings, based on which adjustments to the previous assumptions regarding the research are made

in a continuous process. The main difference between the two approaches stems from differences in applying theoretical frames. Grounded theory is more oriented towards new theory generation whereas systematic combining is designed for the refinement of existing theories based on case studies (Dubois and Gadde 2002). In grounded theory, researcher commences data collection and analysis without an explicit theoretical frame, and instead slowly builds one inductively based on empirical observations as the process progresses (Charmaz 2000). In systematic combining, the importance of having a defined framework on which findings are reflected upon at all times is stressed along with the capability to replace or adjust it as research progresses (Dubois and Gadde 2002). Similar calls have been also made by Yin (2009), who argues that case studies benefit from *"prior development of theoretical propositions to guide data collection and analysis"*.

In this study, data collection was conducted without following a specific research framework, though initial data collection design was inspired by innovation process studies by Van de Ven et al. (1999). As data collection and analysis progressed, potential frameworks from idea management tool, social media and groupware studies were contemplated in order to find an answer to the general question "How are idea management tools used?" Iterative process of examining existing research and collected data ended in discovering frameworks utilized practice theoretical groupware studies as the most fruitful for the purposes of this study. After considering several potential alternatives (especially Orlikowski 1992, DeSanctis and Poole 1994, Orlikowski 2000, Boudreau and Robey 2005) for the final phases of the analysis, a modified version of framework proposed by Orlikowski (2000) was followed. This will be presented later on. It could be argued that the research effort was at first mostly inspired by grounded theory approach but oriented towards systematic combining as things progressed. It must be said that at no point however was systematic combining or grounded theory as presented by Dubois and Gadde (2002) and Charmaz (2000) rigorously followed. Still, the basic premises inherent in both approaches regarding the uncertain nature of research processes and being critical of existing theories were adhered to throughout the research process.

As said, an adjusted version of the research frame proposed by Orlikowski (2000) was utilized for this study. The context for the use of technology will be examined with the three categories of conditions: technological, interpretive and institutional. However, the examination of the consequences of enacted practices is focused solely on the processual aspects. Processual consequences were seen as the most important type of consequence when trying to understand how idea management tools can support the innovation efforts of members of an organization. Though examination of especially structural consequences would have been intriguing, it would have required a larger longitudinal study, which was unfeasible within the time and other resource limitations of this research. For the same reasons, focus was directed mainly on the new practices

that formed around the idea management tool as it was introduced to the organization instead of changes to the existing practices. In other words, it is the new innovation practices, not the change of innovation practices that was studied. Finally it should also be noted that Orlikowski (2000) utilized her grouping of conditions and consequences to a macro level examination of groupware use after its introduction to case companies. For each user group a single overarching practice was specified. This study however takes more of a micro level approach examining smaller scale practices in order to understand the nuances of idea management tool use, which have been largely disregarded in previous research.

3.2 Interview Analysis

Analysis of the interviews consisted of several rounds. First interview sections were coded with thematic codes at paragraph level. It should be noted that thematic coding was primarily designed to support open coding, which is described later. Initial list of the thematic codes was generated deductively together by the author and post-doc researcher based on experiences from previous research projects and the interview protocol which had been designed and used for data collection. The fit of thematic codes was tested with three interviews, by both the author and the post-doc researcher individually. Based on the pilot, one code was removed and one renamed. In the final version there were 13 codes in total and the same codes were used for each interviewee group though process-wise each interview group was coded separately. Paragraphs which touched multiple themes were assigned all the corresponding codes. The codes are described in detail in Table 1.

Code	Content Description
Educational and vocational background	Informants educational background, history in the organization and previous job if new to the organization
Formal position and job description	Position in the organizational hierarchy and job description
Innovator profile	Areas of interest with regards to development activities and motivational factors
Definitions	Personal definitions of innovation related terms and concepts
Innovation activities	Experiences and assumptions related to innovation activities and practices in the organization as a whole
Innovation practices	Accounts describing personal innovation practices
Innovation Journey	Descriptions of recent innovation processes where the informant had had an active role
Innovation initiative	Experiences, expectations and assumptions related to the whole innovation initiative at the case organization

Innovation Coaches	Experiences, expectations and assumptions related to innovation coaches
Idea management tool	Experiences, expectations and assumptions related to the idea management tool
Idea sessions	Experiences, expectations and assumptions related to idea sessions
Technology Lab	Experiences, expectations and assumptions related to the technology lab
Inspirational events	Experiences, expectations and assumptions related to Inspirational events or the innovation initiative

Table 1: Thematic codes

Simultaneously with thematic coding, interview parts where informant described his assumptions relating to innovation activities and the idea management tool or innovation practices he or somebody else enacted were open coded. This was done on a sentence-level. The open codes were generated inductively and consisted of short sentences that described the specific assumption or practice as accurately and richly as possible. Because of the aspiration to richness, by default all open codes were unique. Each open code co-occurred with one or more thematic codes. Examples of open codes and their relation to thematic codes are illustrated in Table 2.

Open code	Co-Occurrence with Thematic Codes
It feels like as if old decisions are never re-examined since it would question one's authority.	**Innovation activities**
Before the tool there were no channels for ideas except for one's own supervisor => this frustrated the more experienced workers	**Innovation initiative, Idea management tool**
Mary was the "bad cop" doing dirty work, personally worked behind front lines urging Mary not to give up and generating improved proposals	**Innovation practices**

Table 2: Examples of open codes and how they co-occurred with thematic codes

After all interviews had been theme and open coded, for each thematic code, open codes that co-occurred with the thematic code were cross examined. Thematic codes acted as initial grouping for the open codes. However, this grouping was not very rigid as single open code could co-occur with several thematic codes. Open codes inside each group were examined against each other to find similarities and differences in descriptions of practices and assumptions. Based on this findings about shared practices and assumptions and tension between them were documented into a research memo. This analysis was done individually by both the author and the post-doc researcher working on the same case. The findings were compared and discussed based on which general conclusions regarding the innovation initiative were drawn. These were presented at the case company in an open event to all interested employees who were able to comment on the findings.

Code co-occurrence was examined twice. On the second occasion, examination focused specifically on the research questions of the present study. Instead of a broad examination of all the

thematic codes, a more in-depth analysis of open codes co-occurring with thematic codes of "innovation activities", "innovation practices" and "idea management tool" was conducted. This analysis was solely done by the author. Explicit grouping was not done for the management interviews as the amount of open-codes co-occurring with the three thematic codes was small (<20 for each thematic code on average). Instead the co-occurrence lists were read through and conclusions documented into a research memo. For rest of the interviews, open codes co-occurring with each thematic code were grouped based on the issues and phenomena they described. In essence, thematic codes acted as initial grouping for the open codes but they did not form the basis for the subsequent grouping of open codes. Groups were formed inductively and separately for employee and innovation coach interviews. From innovation coach interviews, thirteen groups were formed: (1) won't submit ideas, (2) honing ideas (3) submitting content for others (4)Power of the crowd (5) Culture (6) Motivation (7) Deviation from practices (8) Practices after idea is shared (9) assumptions and expectations (10) Roles (11) implementation challenges (12) clarity of idea descriptions (13) old friends. From employee interviews, 16 groups were formed: (1) idea mass as inspiration (2) follow-up of ideas (3) accuracy of descriptions (4) management presence in tool (5)utilizing the crowd (6) commenting (7) culture (8) rewards and incentives (9) non-use (10) use motivation (11) illegitimacy of use (12) opaque processes (13) work environment idea myth (14) inputting raw ideas (15) intra-role ideas (16) extra-role ideas. Finally, findings from different informant groups were cross-examined for similarities and differences and reflected against the modified research frame of Orlikowski (2000).

3.3 Analysis of Idea Management Tool Data

Practices of using the idea management tool were also studied by examining a database data replica from the idea management tool. First, a group of ideas and the comments that each idea had received were read through and brief memos written on the important findings. This group included all the ideas posted by the 10 employee informants (13 in total) as well as 15 of the most commented ideas and 10 randomly selected ideas which had received no comments. In the second round of analysis, all ideas posted by each informant (including innovation coaches and managers) were examined and ideas where contributors were enacting similar practices were grouped together (one idea could belong to several categories). Five categories were formed using grounded theory approach: "raw ideas", "mentor acting as an intermediary", "call for concretization or buzz", "constructive discussion" and "enthusiastic idea advancement". Open codes in each of these categories were cross-examined for similarities and differences. After this, a rough analysis on the content of the comments was carried out. First, all comments from three randomly selected ideas from the "constructive discussion" category were categorized inductively. Resulting 13 different categories were then tested with 7 new randomly selected ideas from the "constructive discussion"

group, since ideas in that group generally included a variety of different types of comments. Based on this, seven additional categories were found. Sample was again increased and categories tested on 5 more ideas from "constructive discussion" group and 10 randomly selected ideas which received little (1 -3) comments. No need for additional categories was found at this point. It must be noted that this categorization was never intended to act as basis for in depth analysis and thus it is not presented here. Purpose was simply to understand what kind of things people addressed in their comments and how did the contributions of the ideator, idea's mentor, regular users and innovation coaches not acting as mentors differed. The findings are discussed in section 4.3.2, which deals with the commenting practices different users enacted.

Database data from the idea management tool was also analyzed quantitatively. Compared to the qualitative analysis of the same data, the focus of this effort was mostly on aiming to understand how much the utilization of the idea management tool had varied during its existence. In general, the purpose of the quantitative analysis was to provide an additional complementary perspective on the use of the system, not so much to act as basis for theory testing or building. Database tables containing all the posted ideas and comments including user information and timestamps were exported into Microsoft Excel. The amount of new ideas, comments and votes was calculated for each month of use as was the amount of unique users who contributed comments, ideas or votes to the system (each group separately). In addition to this, all ideas posted to the tool between its launch and 2 months after the interviews were conducted were divided into two categories, based on whether or not the idea had a component that would be explicitly visible to an end customer, i.e. product or service would change so that customer notices it. The purpose of this was to examine how well the perception of the informants regarding the topics (new offering related idea vs. work environment related idea) of ideas posted to the system matched reality.

3.4 Document Analysis

Simple document analysis of a variety of documents related to the innovation initiative was undertaken as well. Each document was read through and notes written about the interesting findings. This was done solely by the author. Process-wise, analysis was undertaken after interviews had been coded. There were three focus points for the analysis. First was to cross-check findings from the management and innovation coach interviews regarding assumptions and rationale related to the idea management tool and innovation initiative. Second, especially PR-material related to the idea management tool was gone over in order to gain understanding how the idea management tool and innovation initiative in general had been communicated to the employees. Third point of focus was examining how well the intended plans defined in preparatory documents had been met. As with the quantitative analysis of the database data, the purpose of

document analysis was to complement especially findings from the interviews and provide context information related to the study.

By following the research methods and process described above validity the results was made sure with triangulation on two levels. The interview results were data triangulated (Denzin 1978), as the same issues were discussed with people from different formal roles and responsibilities as well as different parts of the organization and these findings cross-examined. Also, the findings from the dataset in its entirety were methodologically triangulated (Denzin 1978), as interview results were compared with qualitative and quantitative analysis of the idea management tool data and findings from the document analysis.

4 Results

This section will present the results of the empirical study. First, a description of the case company and the innovation initiative which the idea management tool was a part of is provided. Then the results are presented following a modified version of the research frame proposed by Orlikowski (2000). Actual results are divided into two parts, first giving a description of the context related conditions that provide the backdrop for the enacted practices. Second part focuses on the practices themselves and different individual and institutional aspects related to them. To clarify terminology related to different roles regarding the system, ideator refers to any user, be it employee, innovation coach or anyone else who has posted his idea to the idea management tool. Mentor refers to the innovation coach who has been formally assigned as responsible for helping the ideator advance the idea. Innovation team refers to people responsible for the hands on implementation of the innovation initiative as a whole, meaning the innovation manager, head coach and innovation coaches. These roles are described in detail in section 4.1.

4.1 Empirical Case

The empirical data for this study was gathered from a single firm, which will be hereafter referred to as the Company. Company is a large Finnish financial institution, which provides services related to its business operations and ICT infrastructure as well as services to consumers and firms ranging from banking to insurances and real estate agency. The institutional factors related to the Company are described in detail in the section 4.1. In summer 2011 the Company started a large initiative in order to boost innovation activities in the organization. The goal was to create a new, more innovative culture to the organization thus improving the capabilities to introduce both incremental operational improvements as well as radical innovations that could transform the whole industry leading to competitive advantage and financial returns. Focus was especially on innovations that could improve customer experience. One central element in this iniative was introduction of an idea management tool, which is the main focus of this study. However, in order to examine the practices related to the tool, it is crucial to have understanding about the larger whole to which the introduction of the tool was linked to.

The initiative concretized itself to a collection of new roles and tools which were introduced to the organization. Three new organizational roles were formed: innovation manager, head of innovation coaches and innovation coach. Innovation manager was a part of the Company's executive board. His responsibilities were to manage the implementation of Company's innovation strategy and supervise the innovation operations and their development as a whole. Manager would keep rest of the board informed on innovation related matters and if necessary escalate relevant decisions to the board when needed. Head coach works as the innovation manager's right hand. He would be

responsible for the management of Company's idea portfolio and supervise so called innovation coaches, with whom the innovation coach would handle the operational aspects of supporting innovation in the Company. Like the innovation manager, head coach would promote innovation thinking in formal arenas. Innovation coaches were recruited from in-house to act as hands on innovation evangelists inside the organization. Coaches worked especially in the interface between inventors and the organization. Coaches acted as moderators in the idea system and organized idea sessions and larger innovation relevant events. Total amount of coaches was 7 and the group had been gathered from different parts of organization, so that all major units had their own coach. Coach was a part-time role and coaches were permitted to spend 20% of their total work time in coach tasks.

In addition to the new roles, four new support tools were designed and implemented: idea system, innovation talks, ideation session and an idea lab. The idea system will be presented in detail in the findings section. Innovation talks were public events, usually held at the office auditorium, where any employee could come and participate. Events were held about once a month and the topics varied each time. Usually there was an external expert to talk about subjects related to innovation and innovation activities inside the organization. Topics of the talks ranged from innovation theory and best practices to the presentations of subject fields were the Company is trying to generate more innovation. Ideation sessions were workshop-oriented events where rough ideas were refined to more concrete concepts. Ideation sessions were led by innovation coaches who had been trained on specific methods and techniques aiming in both the recognition of new ideas and developing them further. In addition to inspirational and generative events, a new physical space, coined ideation lab was also built. Space served both inspirational and educational purposes. In the space, modern information technology such as newest smartphones, tablets, touch tables and other state-of-the-art gadgets were available for anybody to try and experiment with. It was believed that by giving the opportunity for people to familiarize themselves with new devices the overall tech-savvyness in the organization would rise, thus increasing organizations ability to innovate customer solutions around new technologies. Increased technological understanding was also perceived to help overcome communicational challenges in the interfaces of business and ICT divisions.

In essence, the introduction of the idea management system was one piece of a larger project, that aimed to harness the innovative power of all the employees to the benefit of the organization by providing a wide variety of tools and resources, which individuals and groups could utilize in their creative endeavors. All the measures were branded together as a one coherent toolbox available for everyone in the Company to take advantage of.

4.2 Conditions for the Use of the Tool

Since the practice theoretical approach emphasizes the crucial role of the context where practices are enacted in the constitution of practices, it is important to take into account key elements that form the backdrop for the use of the technology. This study follows the approach of Orlikowski (2000), dividing context related results into three groups: institutional, interpretive and technological conditions for the use of the system. Interpretive conditions deal with the assumptions, expectations and other shared understandings regarding especially the technology in focus (Orlikowski 2000). Technological conditions refer to the symbolic and material properties of the technology in focus (Orlikowski 2000). Institutional conditions refer to the formal and informal *"social structures (normative and authoritative) that constitute part of the larger social system within which users work"* (Orlikowski 2000). More detailed description of the conditions can be found from section 2.3.2. Institutional and interpretive conditions related to the enacted practices were derived from the interview data of all informant groups. This is not to say that all informants shared precisely the views described, but that these were the generally shared assumptions and about what the organization and its members were like. The analysis of technological conditions is based on the examination of the functions of the tool, documents describing the process model and interview data.

4.2.1 Institutional Conditions

The interviewees described their organization as one which valued familiar ways to operate. The industry where the Company operated was very mature and the Company was one of the oldest and most established players in it. There was a strong organizational hierarchy both inside and between different parts of the organization. Work roles of employees were well defined and respected. Formal boundaries were respected and there seemed to be a general tendency to avoid disrespecting others' territory. Disagreements between different parts of the organization or employees at the same hierarchical level were usually solved with negotiations. There were some cases where development efforts stopped when disagreements couldn't be solved. The possibility to advance matters by excerting pressure through people higher in the hierarchy was acknowledged, but seen problematic in the long run and thus generally avoided. In addition to this, Company also had to operate inside a rather rigid regulative environment, which created external constraints for development efforts. It was stated that the Company's approach regarding the regulative environment was mostly passive with little efforts to try influencing them. All this contributed to a culture where there was a general tendency to avoid uncertainty.

Inside the organization, there was an internal divide between the so called ICT and business sides of the organization. ICT side of the organization was responsible for the development and maintenance of all the information systems which formed the technical infrastructure on top of

which all the financial services that the parent Company offered its clients ran. Business side acted as an intermediary between the ICT side and the parent Company and clients. Business side coordinated the collaboration and acted as an internal client for the ICT side. Organizational arrangements between the two sides were a bit different, the most notable difference being monitoring and reward practices. Employees at the people in the ICT division had billed hours as one of their key performance indicators, meaning that by default all their activities should be billable to (internal) clients. Same practice was not present in the business side of the organization. People in the ICT division had engineering backgrounds and thus general knowledge and interest for all things technical. People in the business division on the other hand had usually business school backgrounds and were less technology-minded but more business and customer-oriented than their counterparts in the ICT division. This difference in backgrounds and knowledge areas posed challenges in their mutual interaction.

Different divisions had their own yearly development portfolios which guided their focus and resource allocations. Normally, development efforts in the organization followed a 5 phase stage gate like sequential process model that defined how innovations should progress from idea to implementation. This model (referred hereafter 'development model') was used in most development efforts and consisted of (1) Concept Definition, (2) Concept Analysis, (3) Development, (4) Piloting and Implementation and (5) Commercialization and follow-up. During phase 3 of software development projects, so called agile process models had been in use for some time also, but were still considered quite new to the organization. Some interviewees touched this subject saying that agile development was challenging since as many parts of the organization followed traditional sequential models and using two fundamentally different models at the same time created problems. Prior to the launch of the idea management tool and innovation initiative, organization had a so called suggestion process for work environment related development. It was used mainly for improving internal things related to the daily lives of employees, but it was shut down at the same time as idea management tool was introduced.

In order to encourage employees to actively use the idea management tool, the innovation team had a monthly acknowledgement, "innovator of the month", which was given to a person who had during the month been active in posting and commenting ideas or innovation efforts in general. Award consisted of a diploma and a free prime parking spot at the campus. Name and congratulations were also published in the Company's internal newsletter. Award was seen as a way to express appreciation of innovation efforts. Similarly, there were also acknowledgements for "success stories": good ideas that were shared in the tool and successfully implemented. Stories were intended to work as positive examples highlighting the usefulness of the tool and the larger innovation iniative.

4.2.2 Interpretive Conditions

The fact that an idea management tool had been adopted in the organization was well known among the employees. Initiative had been branded and given a distinctive name, variations of which were utilized in naming all the new support arrangements brought by the initiative. Open seminars on innovation related topics were held regularly and the initiative very much present in internal newsletters. There were several published newsletter stories which explicitly addressed the idea management tool and ideas posted to it, encouraging everyone to participate in idea generation and commenting. For most informants, the idea management tool was the poster child of the larger innovation initiative as it was by far the best known new support arrangement that had been introduced. All but two informants perceived adoption of the idea management tool as a positive and useful measure for boosting the generation and development of innovations. The two informants who were more reserved were both non-active users of the idea management tool.

The idea management tool was not the first piece of software in the organization, which incorporated principles commonly found in social media applications. A modern collaboration platform with extensive discussion and commenting features had been in use throughout the organization for quite some time already. The interviewees were clearly acquainted with the functionalities and characteristics of social media, with especially people from the ICT side mentioning utilization of such applications in both work and leisure life. In contrast to personal expertise, informants felt that technological understanding in the organization in general was relatively weak, especially in the business side of the organization. As mentioned, this was not visible on the interview data as both the active and non-active users of the idea management tool and business and ICT people seemed relatively knowledgeable on social media and computer software. Still, there were several ideas posted to the idea management tool that addressed people's lack of abilities in utilizing office software and collaboration platforms which had gathered a lot of supporting comments.

4.2.3 Technological Conditions

The adopted idea management tool was built around the idea of open knowledge sharing. All ideas were visible to all users, as were the comments, votes and ratings that the idea had received. Most of the functionalities in the system were available for everyone. In addition to posting their own ideas, users were able to give their say regarding the ideas of others through freely available commenting and voting functionalities. All contributions to the tool were immediately public and weren't pre-screened by anyone. There was no chat or other messaging features for general communication, collaboration or networking. Communication was only possible by commenting a specific idea and each idea comprised of a distinct discussion thread. Innovation coaches and the head coach acted as content administrators of the systems. They were also able to send private

messages linked to a specific idea to all users. Other users could respond to these messages but not initiate private messages by themselves. The tool was only accessible via computers inside the Company network and accessing with mobile devices was not possible.

The form for each idea submission was standardized and consisted of the following fields:

- Problem
  - Type: text field
  - Content: description of issue that the idea addresses
- Solution
  - Type: text field
  - Content: description of the proposed solution for the issue
- Business domain
  - Type: single tag from a predefined list
  - Content: described the business domain under which the idea was seen to belong. Each idea was assigned a single domain
- Tags
  - Type: multiple tags which the user could freely define
  - Content: described the themes related to the idea
- Self-evaluation
  - Type: four numerical values and optional text descriptions
  - Content: four measures evaluated on 5 point Likert scale
    - Newness
    - Savings / Growth potential
    - Competitiveness
    - Readiness for market
  - Filled by the ideator himself. Regarding each value, it was possible to add a short description to justify the selected rating

All text fields were plain formatted, meaning that there was very little functionality for emphasizing parts of the content. Methods that could be used in normal word processing software like bigger fonts, colors, underlining, bolding etc. was not available. The user interface was optimized for relatively concise descriptions, especially when it came to commenting. It also encouraged mainly text based descriptions, as there was no functionality to help add calculations or other numerical accounts regarding the idea.

In addition to ideas, it was also possible to post challenges to the system. This functionality was also available to everyone. A challenge consisted of a problem description for which the person submitting the challenge was looking for solutions. Users could then post their own solution ideas, which could again be freely commented, voted etc. Since the amount of challenges posted to the system was low, focused examination of challenges was decided to be omitted from this study.

A formal process model to guide the development of ideas posted to the tool was also defined. This will be hereafter referred as 'idea model'. In essence, idea model was a stage-gate inspired sequential process model. Model is visualized in Figure 6. First stage consisted of idea generation and the ideator sharing it with the tool. All ideas posted to the tool advance to the second stage,

which is idea development. A suitable innovation coach is assigned as a mentor for the idea depending on the content of the idea. During development phase, the idea is commented and voted on in the tool by employees, innovation coaches and management. If no buzz forms around the idea in one month, idea is archived. Those which do create sufficient amount of interest, advance to the third stage, idea selection. During idea selection, all innovation coaches evaluate the idea based on the same criteria that ideators use in their self-evaluation. Depending on the review idea advances to fourth stage, gets archived, postponed to the future or forwarded to parties more suitable for advancing the idea. In the fourth stage, final implementation decision on the idea is made. Involved in this process are the innovation team and business line management. During the stage business line management acts as a key gatekeeper. After implementation decision, idea development follows the regular development model described earlier meaning that the business line where the idea belongs becomes responsible for resource allocation for the development efforts. In other words, business line has to fund development themselves. Decision whether or not to fund rests solely on business line management, and innovation coaches or innovation manager have no formal authority to influence the verdict.

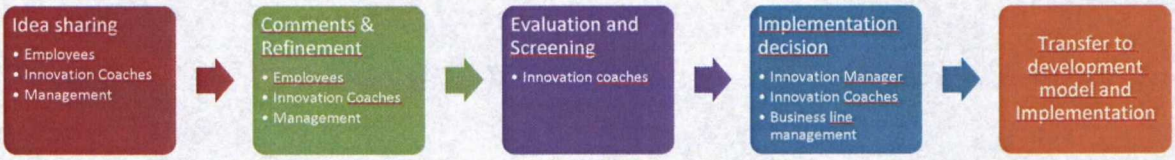

Figure 6: Visualization of the Idea Model

4.3 Practices of Idea Management Tool Use

This section presents empirical observations of the practices of idea management tool use enacted in the case organizations and factors prominent to the constitution of these practices. Findings are based on the interviews of all three informant groups, document analysis as well as qualitative and quantitative analysis of idea management tool data. Structure loosely follows the idea model of the Company beginning with idea sharing practices and ending in practices related to idea implementation with practices linked to the non-use of idea management tool discussed in the middle. Examination of practices related to idea sharing, commenting and non-use are approached mainly from the viewpoint of individual users. Selection and implementation practices however are studied primarily from organizational perspective, though the viewpoint of individual actors is discussed as well.

4.3.1 Idea Sharing Practices

In general the ideas posted to the system were raw and unpolished. The problem and solution descriptions were brief, generally one paragraph each at most and in some cases just a couple of sentences. Things like technical or business feasibility and fit to Company strategy were seldom strongly addressed. People were not afraid to post ideas that were outside their area of expertise. Posted ideas were usually generated by single individuals. There were some instances identified where idea was created by a small group of people. Usually those ideas were ones that had risen during ideation workshops and later posted to the system. Though innovation coaches sometimes posted other people's ideas to the tool on their behalf, usually people posted their ideas themselves. Ideators had not usually discussed their idea beforehand with colleagues or other parties, posting it to the tool being the first act of sharing. Despite the fact that idea descriptions were short and they were not discussed beforehand with others, several users mentioned that their ideas had been brewing in their minds for some time, meaning that ideas weren't necessarily posted to the system immediately when they came into mind. Some informants reported using the ideas of others as inspiration for their own ideas. Ideas were also browsed to gain awareness of ideas related to one's own business area.

Innovation coaches also posted their own ideas to the system, though there was an internal divide regarding this practice inside the coach community. Some coaches described consciously refraining from it in order to concentrate more on commenting of ideas others. Several reasons for this were given, for example wanting to appear as neutral as possible and seeing that helping and supporting others would be more productive. No explicit critique to those coaches who were active in posting ideas was given and all coaches had posted at least one idea to the system at some point. There weren't any significant differences content-wise between coaches' and regular users' ideas: coaches enacted the same practice of sharing raw ideas as other users.

Idea management tool was mainly seen as a channel for those ideas for which one didn't already have a channel. Following this, the informants mainly shared only ideas that were outside their formal work roles. Posting ideas related to ongoing own projects was seen as counterproductive since project teams already had the necessary means to decide themselves whether to implement the idea. Involving innovation coaches or other decision makers would simply complicate and slow the process down. Some also mentioned that utilizing the system as a channel for ideas directly related to one's formal role would lead to excessive visibility and rewards for " just doing one's job". One contributing factor to posting extra-role ideas could also be desire to respect the official hierarchy. Posting idea to the tool if it can be discussed with one's supervisor could be seen as ignoring the regular chain of command, which was generally avoided in the case company.

There was a strongly shared perception among the interviewees that the majority of ideas posted the tool dealt with work environment improvements, not new products or services. Many also noted, that this phenomenon was especially strongly visible right after the launch of the tool and that slowly, the amount of product and service ideas had been increasing. Despite the developments, the innovation team still saw this unbalance as problematic, as the general aim of the innovation initiative was first and foremost to create new, radical offerings. This goal was also visible in the internal presentation and preparation documents of the innovation initiative. Among the employees, the views on whether or not this posed a problem were somewhat divided. Many thought that it would be better if there were more ideas outside the domain of workplace improvements. However, one interviewee commented regarding a newsletter story where head innovation coach had urged people to input more ideas to the customer interface.

> *"...and I just thought that isn't it just as important, as a matter of fact, developing those everyday things related to work..." (Regular user #1, interview)*

Interestingly in reality the practice was not as prevalent as perceived. Quantitative analysis of idea management tool data revealed that the amount of work environment ideas was not significantly larger than ideas visible to end customers. Also, though some small decrease in the amount of work environment ideas could be argued to have occurred, the amount was not very significant. When the amount of comments that ideas in each category were calculated, it revealed that on average, work environment ideas received more comments than product or service ideas (4 vs. 4,5). Also, the amount of ideas which received no comments at all was smaller regarding work environment ideas. The phenomena are visualized in Figure 7 and Figure 8.

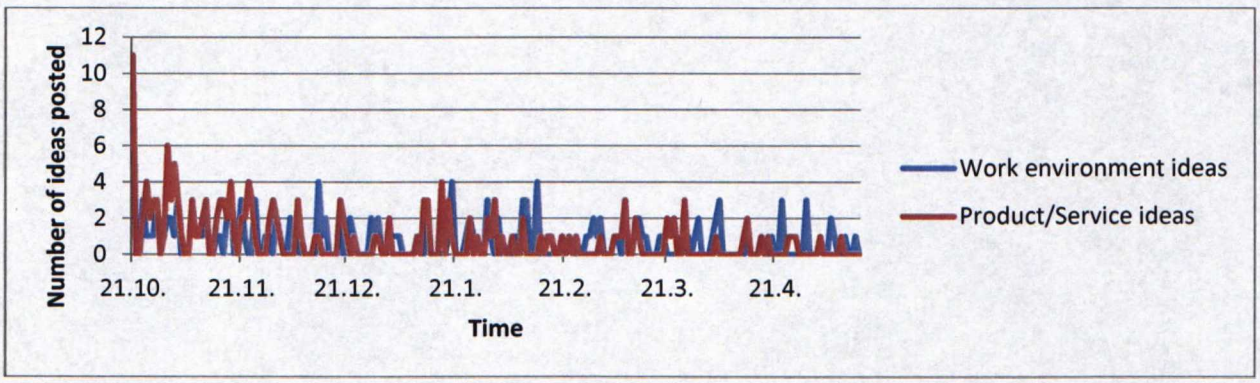

Figure 7: Amount of different types of ideas as a function of time

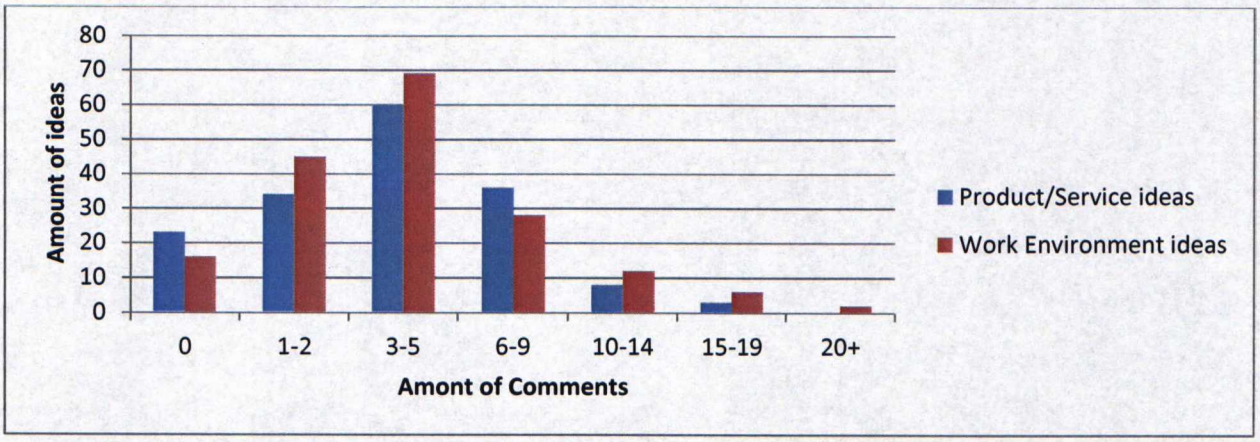

Figure 8: Ideas examined based on the amount of comments they received

4.3.2 Commenting Practices

Exploring the content of the comments posted to ideas, a large spectrum of different contributions was visible. People showed their support for the idea and critiqued them. Support was a lot more common and only in a couple of examined idea the comments contained explicit critique. Opinions and suggestions on requirements, solutions, refinement and feasibility of the idea were given, both from layman and expert as well as organizational and user/customer point of views. These opinions were discussed and debated by the commentators: clarifications were asked for and given, opinions challenged, alternative viewpoints presented etc. Also commenters pointed out people responsible for areas touching upon the subject and on-going or previous projects that dealt with similar issues. Usually these comments included a suggestion for "someone" to contact them indicating that commentators were passive in taking action themselves. However, there were cases where people promised to ask around or relay comments from others in the same way that innovation coaches sometimes did. Those innovation coaches who weren't the mentor of the idea were often quite active commentators participating in the discussion in similar ways as "regular" commentators: proposing solutions and refinements, debating opinions etc. No significant content related differences in commenting behavior was seen between those ideas where the ideator was a regular employee and those where it was an innovation coach. It was also noted that commenting ideas considering work environment and internal things directly related to one's everyday work is easier compared to other ideas since it's easier to imagine what the concrete changes proposed by the idea would be. This could be one of the reasons why work environment related ideas received more ideas than product/service ideas.

In general, the ideator himself was usually relatively passive in participating in the discussion around the idea. In many ideas, ideators didn't contribute any comments at all even if discussion around the idea was lively. However, some ideators were more active in this respect, responding actively to the comments of others and encouraging further contributions. No clear indications that

activeness the ideator would have resulted into significantly larger amount of comments was found. Analysis of the contents of ideators' comments showed efforts to convince others by explicating link to Company values or strategy, giving concrete problem or solution examples, debating and challenging opinions as well as thanking and spurring for contributions. There were also propositions on how the development process should progress, i.e. what could be the next steps for taking the idea forward. These comments were practically always phrased as suggestions instead of being more like plan reports. Very seldom did ideators touch on the status of the idea, i.e. in which phase of the formal process is the idea going.

Comments of the mentor of the idea were mostly about encouraging the ideator and commentators for more contributions. Mostly their nature was more towards general encouragement than challenging to think through specific aspects of the idea. Mentors also posted brief status updates on where the idea was progressing. These comments were usually very concise, simply stating that "idea is being evaluated" or "waiting for comments from business area". It was not rare that follow-ups were absent or very short.

Mentors also enacted interesting practices for acquiring and relaying comments from others in order to push the idea forward. This was especially linked with getting comments of people from the business area of the idea. Innovation coaches approached different parties with private messages asking for direct comments or suggestions on who could be the right person to take a stand on the idea. Reactions of the respondents varied. Some posted a public comment to the idea in the tool. Others answered the innovation coach via private messages. In these cases the coach usually took an intermediary role, copy-pasting the received response unedited as a public comment to the idea, including naturally the name of the commentator. However in some cases mentor explicitly asked the respondent to comment the idea directly instead of answering to the mentor. This practice was not followed systematically.

Some respondents delegated the task forward. This usually happened in one of the two different ways. Sometimes respondents sent an answer stating persons innovation coach could approach. In other cases, the respondents directed the task to someone else, who directly commented on the idea in the tool. Naturally, there were also cases where the approach of the mentor was ignored. During the whole process, mentor usually made his/her efforts visible by posting a small comment to the idea, such as "comments from experts are being pursued". These updates only very seldom contained the names of the persons who had been approached. There were also several cases where the efforts remained invisible, as they were explicated in comments.

Ideators experienced the briefness of different status updates given by mentors as problematic, mainly because they didn't contain sufficient information on what was actually happening with the

idea. Regarding following-up on ideas themselves, interviewees stated it as unfeasible as they had "their own job to do" and didn't have the time or energy to actively look after the idea or push it forward. Some also mentioned that they didn't want to raise too much attention around themselves. Still, many ideators expressed that they would have gladly attended meetings to talk and participate in other development efforts but felt that they didn't have the capacity to push the idea forward and find and persuade the relevant people on their own.

In some cases the role of the mentor was transferred from one coach to another during idea development. This usually happened when the original mentor was overloaded or it was later seen that idea content fit another coach better. In these cases, the new mentor simply started to enact mentor practices described earlier. Interestingly, in none of the examined cases were there explicit statements given that mentor had changed nor was the field stating idea's mentor updated in the idea management tool.

Analyzing the amount of comments different ideas had received revealed significant variation in the intensity of commenting practices from idea to idea. About 10% of ideas raised no comments whatsoever where as the most commented ones had over 20 comments. The threshold for commenting practices was smaller than posting ideas, as even the most non-active interviewees stated to occasionally browse and comment on the ideas. The threshold was even smaller for voting for the idea. Of all the 490 public ideas in the system, only 4% received no votes.

4.3.3 Practice of Non-Use of the Idea Management Tool

Interviewees reasoned their lack of use especially through time related constraints. Many stated that they didn't have time or energy to use the system even if they saw it as important and useful. Work directly related to formal job role needed to be prioritized and by default using the system was seen as extra-curricular effort. Some said that when they have time, the like to visit the system. Other stated that after the busier periods, the use of the system was easily forgotten altogether, claiming that constant reminders on the existence and importance of the system could be helpful in this regard. Non-active users indicated that they didn't feel their efforts necessary. One interviewee commented that ideas in the system are well-developed already, and that simply commenting that the idea is good would serve no other purpose than trying to associate oneself as a spotter of good ideas.

Technical difficulties around the system were also one major barrier for enacting practices. Many commented that software bugs affecting the commenting features made the user sometimes frustrated enough that the system was closed altogether and half written comments dismissed. Lack of time was also seen as a contributing factor here, as users didn't want to spend their little extra

time on fighting technical difficulties. It was also mentioned that the amount of ideas in and coming to the database made using the system cumbersome.

According to the interviews, the reward arrangements used in the ICT division was a major barrier of use. The active users noted that they would use the system more if it didn't affect negatively on their rewards. Some non-actives mentioned that being able to bill the hours spent on the system could encourage them to post and comment ideas. Interviews with the innovation coaches revealed that they were aware of the issue and that there were some available solutions for the billing related problems. There was an official billing account but making it available for an individual required significant effort from a number of people, which meant that the mechanism was not used in practice. Some went around the problem, billing the hours on common accounts like "general administration". These solutions were only mentioned in the interviews with innovation coaches. This could indicate that the regular employees were not aware of them. It is also a possibility that they were aware, but didn't mention them because of the fear that the "loopholes" would be shut. This could be seen as unlikely though, as interviewees were willing to talk about other very sensitive matters. Both coaches and regular employees were certain that coming up with sensible solutions to the billing problem would lower the barriers of use.

Ideators perceived the use the idea management tool as not unambiguously acceptable, at least in some parts of the organization. Though all active users and even some of the passive ones saw the system as valuable, many felt that this opinion was not shared throughout the organization. It was mentioned that some in the organization saw contributing to the tool and in virtual communities in general as more of amusement than real work. Such views were evident in among some of the non-active users. They described one of tools major problems as the lack of link to real business. Ideas were seen as unrefined suggestions with little impact on business instead of well-refined concepts. Several other indications of illegitimacy were noticed as well. One ideator who had received innovator of the month acknowledgement had printed the diploma and placed it her cubicle wall. Noticing the award, one of her colleagues commented on in it with *"Oh, well I'm too busy for spending time on things like that"*. Other interviewer admitted in feeling guilt for participating in events related to the innovation initiative.

4.3.4 Selection and Rejection Practices

Regarding innovation coaches' selection practices, both the document and interviews analysis revealed the amount of buzz an idea is able to generate as one of the key performance indicators for ideas, based on which innovation coaches made initial decisions whether or not to spend time advancing the idea. There was a variety of different reasoning behind this. First, it was seen that ideas that raise a lot of discussion and gather votes must be relevant, since people are ready and

willing to spend their time contributing to its development. Second, support of the crowd was also seen as bringing much needed credibility for the idea making pushing it forward easier. If an idea had gathered lots of comments and votes, it would be difficult for the business line management to ignore to dismiss the idea. Crowd thus was seen to be able to create positive pressure that could ensure the advancement of ideas.

Second selection criteria was more pragmatic and invisible in the official documents. Interviews with innovation coaches revealed that one deciding factor for which ideas to pursue further was how straightforward and probable would it be to get a positive implementation decision. Convincing reluctant gatekeepers was seen as near impossible task since innovation coaches including the head coach lacked the formal authority to pressure business line managers. If business line management was not keen on the idea, there wasn't much innovation coach or team could do. Excerting pressure by talking about the issue with someone higher in the hierarchy was considered an option, but it was found tactless and problematic in the longer run. Therefore it was seen that it is sensible to focus efforts on ideas for which a favorable manager can be found. Second aspect to this was the question whether or not a single gatekeeper could be found. Ideas which spanned organizational boundaries and could be argued to be the responsibility of several business areas were seen as problematic since often in those cases different parties pointed fingers at each other unwilling to take on the funding burden on themselves.

Common argument for rejecting ideas was that idea the idea, or key aspects of it have already been thought about. This was the basis of one rejection practice. A person from the business area would comment on an idea directly in the tool, or via an innovation coach, that there is or has been efforts related to the themes of the idea in a previous or current development project. If there was an ongoing development project, usually the comment included a notion that aspects discussed regarding the idea in the tool are taken into account in the ongoing project. After the comment the idea was usually archived by the mentor on the basis that the idea is already being realized. If themes of the idea related to a previous project, comment from the business area ordinarily stated the idea has already been implemented or implementation was deemed infeasible. This prompted the mentor to archive the idea as either implemented or impractical depending on the case.

However, the ideators themselves, especially those who were regular employees were discontent with this practice. Some felt that the ongoing or previous efforts claimed similar to the idea didn't actually address the same problem and the solution would be only partial or inferior compared to the one proposed by the ideator. Similarly, as the development processes in the organization in general were seen as long and inefficient, some were afraid that idea would at some point be

omitted or watered down. Interviews indicated general frustration regarding the lack of information about ongoing development projects:

> *Answer came saying that they are planning and ideating something like this somewhere and that it's maturing, but who, what, where, that would of course be what you want [to know] as you had been pondering the idea for many years already. (Employee #2, interview)*

Similar frustration with regards to archiving if same themes had been discussed in previous projects and implementation had been found infeasible:

> *There is no clear understanding how long some decision is valid. Banking is very strongly based on IT-systems. So if something was impossible two years ago, do you dare to say today that it's not possible or costs too much? Is it true? (Employee #3, interview)*

Usually the comments from business area were quite concise, longer explanations being very much an exception. Ideators felt that this gave the impression that the contribution of the ideator was not needed or wanted even if they would be motivated to help. One interviewee was hoping for a more dialogic approach to such situations, which could benefit both parties:

> *So that if somebody posts an idea linked to something that is already being done, then it wouldn't be just responded with 'Doing it already, this [ideators effort] is unnecessary' but with 'Great! Come talk about this with us (Employee #2, interview)*

Similar to the practice of linking ideas with ongoing projects, coaches also sometimes bundled ideas that had common elements together into one larger package which was advanced as a whole. This was done for example for a group of ideas that dealt with IT tools and in another case a group of propositions for different types of mobile games. The reasoning behind the practice was mainly based on efficiency. Innovation coaches reported that especially audiences with top managers were cumbersome to organize and by discussing a group of ideas simultaneously time savings were possible. This way also the workload of innovation coaches was reduced when they didn't need to address each idea separately. It was difficult to notice from the idea management tool if a group of ideas had been bundled together. Usually this was indicated only by a concise comment by the idea mentor to each idea that had been grouped together with some other ideas. Details on which ideas were included to the group or why this move was made were addressed briefly if at all. Grouped ideas remained as separate and a new single idea which would combine the content of all the bundled ideas was not posted to the tool. It was technically possible in the tool to define related ideas for each idea, but this functionality was not used according to the log data. Ideators themselves were a bit wary of the bundling practice, holding similar fears as when their idea was

linked to ongoing project. People were worried that their idea will get watered down or forgotten along the process.

4.3.5 Practices Related to Idea Implementation

Though a large number of product, service and process improvement ideas posted to the tool were officially approved for implementation, none had been actually commercialized or implemented during the 14 months that the system had been used. This was a major worry for the innovation team who feared that lack of success stories would make top management doubt the utility of spending money on the innovation initiative and users doubt that the organization is capable and willing to implement the ideas that they post. Supporting this, a couple of employee informants did mention that slow progress of idea development process is annoying and worrisome. As one informant from the ICT division noted:

> *I've spent tens of hours on advancing the idea, which is basically unpaid overtime for me...I'm doing research at home at nights to get things forward but nothing happens. So I'm starting to think that this doesn't make any sense, I should be spending time with my family instead. (Employee #3, interview)*

Regarding implementation, there were major issues in interface between the idea and development models. There were several discontinuities between these processes. First was related to the funding of the efforts. When idea moved from idea model to development model, funding became responsibility of the business area idea belonged to. Before that, business area did not have to cover the expenses of ideator, mentor or other related parties. Second discontinuity was related to the parties involved. During idea model, responsibility for advancing the idea rested on the ideator and innovation coaches. As the idea moved to the development model, primary responsibility was transferred to the business area and innovation coaches were not formally involved anymore.

Among the coaches, there was disagreement about the role of the mentor after the idea graduates from the idea model. Some coaches said that they should act as godparents of the ideas, looking after it from time to time ensuring that it is realized. Others stated that what happens after the idea model is completed is solely the responsibility of business line management. It is difficult to say what the role of the ideator was during the development model as there were so few cases that had proceeded so far. In the single case that was present in the examined data, the ideator was supposed to be a member of the project team, staying involved with the idea. As work had not begun yet, it was impossible to assess what the role was in practice.

There was also a discontinuity related to planning. Each business area had a yearly development portfolio, which defined the projects that were to be undertaken during the year. Based on this the

yearly financial and human resource planning for development efforts was done. There were no formal links between this planning process and ideas brewing in the idea management tool. This meant that in practice all ideas that were generated in the tool required a change plans for the business areas. This problem was not helped by the fact that development efforts had been curtailed earlier, meaning that currently the portfolios were rather packed.

All these problems contributed to the fact that ideas tended to lose their momentum during the final stage of the idea model. Finding a business line that could be responsible for future development, convincing relevant managers to proceed with the idea, freeing up resources etc. were time-consuming and cumbersome tasks. Process was not made easier by the fact that formal authority regarding these issues was quite dispersed.

The technical properties of the tool also made the fact that many ideas lost their momentum during their development very salient. Last received comments and status updates were visible to anyone. Logs showed a significant amount of ideas where time had frozen, last entries being months ago and no follow-ups to the final updates to be found. There were also cases where ideas had been explicitly stated as accepted or implemented in the tool but some months later ideator had posted a comment querying why hasn't the change implemented yet. It is easy to believe that a person browsing through the database could draw the conclusion that ideas very seldom take on and are turned into reality. This is problematic for the future utilization of the tool, as it strengthens the assumption that effort spent on advancing ideas through it might be wasted.

5 Discussion

Discussion is divided into four sections. First the findings of the empirical study are reflected against existing research on innovation tools and practices and idea management tools. Next part reflects on the research process and design and discusses the limitations of the study. Then ideas for future research are proposed. Finally, some implications for the practitioners involved in idea development, management of innovation and designing idea management tools is proposed.

5.1 Contribution to Research

Practice theoretical approach, which has not been extensively used in idea management tool research, proved out to be a fruitful lens to examining how such tools are used in the grassroots level. It came across as especially suitable for the examination of relationships between different contextual factors, context and user behavior and behavior of different user groups. Practice theoretical approach provided understanding on what kind of ideas are shared through the idea management tool and which through more traditional mechanisms. Also uncovered was the multitude of different commenting behavior, user community's role in screening and selection of ideas as well as dependencies between idea management tool and other organizational arrangements.

Though the practice theoretical approach followed in this study questions several key assumptions on which existing research on idea management tools builds upon, many of the proposed benefits for the application are present in empirical observations. In line with Soukhoroukova et al. (2010) Idea management tool acted as a new channel and helped people advance their ideas. It also enabled ideators to gain help from the user community and utilize it in their individual creative efforts, findings similar to the study of Bailey and Horvitz (2010). Comments and debates around ideas were seen to contribute both to the substance of the idea and it's advancement in the organization. This suggests that idea management tools provide support for both creativity and implementation on the level of individual ideas and ideators. Though availability and confidentiality have been noted as key aspects in idea sharing (Lempiälä 2011) and those issues were ambiguous in the context of the idea management tool, ideas were still shared.

Idea management tool also brought benefits from the viewpoint of the organization as a whole. With the tool, the case company was able to capture a large amount of ideas, which became documented and stored. Many ideators implied that the idea management tool was the only available channel for advancing the ideas they put there, suggesting that without the tool, these ideas would have been unlikely to surface. Decision makers were able to utilize the user community in their selection practices which reduced their workload as suggested by Montoya-

Weiss and O'Driscoll (2000), Bailey and Horvitz (2010) and Soukhoroukova et al. (2010). Still, the amount of work required especially from innovation coaches to keep the operation running was significant. Though the claim that with design decisions the managerial workload related to idea management tools can be decreased (Montoya-Weiss and O'Driscoll 2000) was partly confirmed, considerable efforts were still required from the management and especially the innovation team.

It was interesting to note how largely the views and reactions of the user community affected idea screening and selection. Delegating responsibility could be seen as a way to make innovation efforts meaningful to the employees and empower them, and issue emphasized by Dougherty and Hardy (1996). Interestingly, the power of the users was not strongly explicated though. It makes one wonder that if it would have been underlined to the users that their voice really can make a difference, would ideators have been more active in seeking support inside the system. Would users have been more active commentators in order to exercise their power? Whatever the case, the central role of the community in idea screening raises the question: if large part of evaluators might not have very deep domain expertise regarding the evaluated ideas, how does this affect a) what kind of ideas get through and b) what kind of ideas are posted to the tool in the future?

Previous studies have not discussed facilitator roles with regards to idea management tools, but the empirical observations regarding Company's innovation coaches suggest that there are many benefits in assigning a group of people with the explicit responsibility of helping ideators to take their ideas further. In the case company, support provided by innovation coaches was not limited to the person formally involved with the idea as a mentor, since "off-duty" innovation coaches were also often very active commentators of ideas. Interestingly it seemed that the support provided by the mentor was more administrative, whereas off-duty coaches helped with the actual substance related matters of the idea. There were several indications that the fact that the innovation coach role was part-time only limited coaches' ability to provide support to ideators. 490 ideas posted in a time period of about a year and 7 coaches meant that each coach was supposed to mentor approximately 70 ideas each year. Reflecting this, the fact that mentors' comments we concise is not a large surprise.

The examination of practices around the idea management tool uncovered a multitude ways to use the system and complex relationships between different practices. Compared to earlier findings about idea sharing, the practices enacted in the case organization were interesting. Ideas were shared when they were still at a raw state and without discussing them with close colleagues first which differs from the observations made in previous studies of idea development (Lempiälä 2011). Users mostly matched their use of the tool with their previously unfilled needs instead of redefining their existing development practices. Idea management tool was used for sharing ideas

for which the ideator had no other channels because they were outside his formal work role. It was seen that advancing such idea through normal chain-of-command of one's superiors was problematic.

Comments to ideas were given from perspectives of both inside and outside formal job roles. Concepts were refined and new approaches brought to the fore and contacts introduced and overlapping projects made known through commenting practices. The extent of the constructive feedback was very case-specific however. This is in line with the findings of previous studies, which have noted the key role of enacted practices to the constitution of actual benefits which can be drawn from a technology (Lynne-Markus 1994). Idea mentors were relatively brief when giving updates on the status of each idea and ideators passive in following up on their own ideas. This led to transparency problems in the idea management tool and users experienced it as a black box where one puts an idea without ever really knowing what will happen to it. Issue could have been mediated without changes to the actual features of the tool by enactment of more active practices by both ideators and mentors. Regardless, the passiveness of ideators could be seen as one implication of the fact that using the system was considered an extra role effort. This would suggest that the idea management tool was disconnected from the daily practices of the organization, the importance of which is stressed by Dougherty and Hardy (1996).

Previous research has emphasized the importance of linking ideas and company strategy has been stressed both in process model and idea management tool literature (Montoya-Weiss and O'Driscoll 2000, Cooper 1994, Khurana and Rosenthal 1998) and studies on innovation practices (Garud et al. 2011, Dougherty and Heller 1994) to ensure smooth idea advancement. Compared to idea management tools that have been examined most previous studies, the tool at Company was rather simplistic. In the idea submission and presentation form, there was little for the ideator to reflect the linkages between the idea and the organization on a holistic level. Unlike in applications presented by Cormican and O'Sullivan (2003) or Montoya-Weiss and O'Driscoll (2000), ideator was not asked to specify how the idea fit the company strategy or what kind of resource allocation requirements would its realization pose on the organization. Empirical observations of this research point out however, that major challenges in implementation stemmed from discrepancies on tactical, not strategy level. Problem was not that proposed ideas were outside the scope of the case organization. Instead, challenge was that their implementation would have required significant changes to the plans business lines were already committed to as there were no working practices that would have bridged "normal" development efforts driven by yearly development portfolios and ideas arising from the idea management tool. This resonates with the findings of Dougherty and Heller (1994), who noted problems arising as soon as the responsibility for a new product was after its market introduction transferred to established business line since they treated it with the

same routines as established products. It seems that similar problems are encountered also when transfer is attempted earlier in the development process. Lengthy and ambiguous decision making processes lead to lost momentum around the idea and made innovation coaches select ideas based on the expected ease of championing, instead of qualities of the idea itself. Findings are also in line with the proposition of Khurana and Rosenthal (1998), who stress that major barrier for holistic innovation development is the fact that decision making authority is scattered around the organization.

The implementation problems were related to the existing development and incentive practices of the organization. Therefore it is reasonable to assume that the solutions proposed in process model and idea management tool literature, such as explicating strategic link in the idea concept and emphasizing it during screening phase (Khurana and Rosenthal 1998, Montoya-Weiss and O'Driscoll 2000, Flynn et al. 2003) would have done quite little to address the issues. Implementation issue serves as a good example of the interconnectedness of practices. Practices around the idea management tool were compromised because of development practices enacted in other parts of the organization and the discrepancies between the two. Bridging attempts were hampered by the culture of respecting hierarchy as well as decision making and incentive practices. Innovation coaches had no formal power to resolve issues and business line managers were rewarded only for the enactment of the existing development practices effectively creating a stalemate situation. These highlights the types complexities related to the utilization of idea management tools.

One interesting finding was the perception that majority of shared ideas concerned work environment related issues when in reality they were not overrepresented in the data. Some potential explanations can be proposed. The preparatory documents showed that during the design phase of the innovation iniative, one external consultant had warned the workgroup that often open idea management tools tend to attract especially work environment ideas. It is possible that this comment started living its own life and made people pay extra attention to work environment ideas, seeing their share as larger than it actually was. Another possibility is related to technical features of the tool. The user interface orders the ideas based on the timestamp of the latest comments posted on the idea, meaning that those ideas which were most recently commented, appear on the front page. As work environment related ideas received more comments they were more likely to be visible to users. Since this study has emphasized the importance of contextual issues regarding technology, it's good to note this as an example of a situation where the technical solution used in the tool had significant consequences. Nevertheless, it also serves to show how difficult such effects are to asses beforehand. Not everyone can guess that the utilized user interface sorting

algorithm plays a part in the constitution of assumptions related to what kind of ideas employees post to the system.

5.2 Limitations of the Study

In general, practice perspective on idea management systems proved out to be a productive approach to the examination of idea management systems. Research design wise, the study would have benefitted from a larger interviewee sample. Especially interviewing business line managers responsible for taking ideas forward after initial development would have contributed greatly to the research. Better understanding about their practices and institutional conditions related to their role would have given increased insight on issues at interface between the tool and the organization. Though interesting observations were still possible to make, reflecting on the challenges related to idea implementation would probably have been more fruitful. Also, interviewing more active and passive users of the idea management tool would have created a richer understanding of the prevalence of different practices.

Study would have also benefitted from a richer use of different research methods. Usually ethnographic research and examinations of practices includes informant observations (for example Orlikowski 1992, 2000; Boudreau and Robey 2005, Hayes and Walsham 2001) for more detailed understanding on the assumptions and practices present in the case organization. The methodological challenge was not made easier by the fact that the author was not present in some of the interviews which were included in the dataset. However, since there still was a vast amount of different types of data from different sources and a relatively heterogeneous informant sample for the interviews with rigorous data triangulation the validity of findings could be ensured. The lack of observational data was also mitigated by the fact that examination was focused on practices enacted inside the idea management tool and the fact that detailed activity and content logs from the tool were available for investigation.

Thirdly, the study would have benefitted from interviews of the same informants conducted at different points of time. Stronger longitudinal orientation would have also allowed examination of the change of practices, a phenomenon which has been studied relatively little. Now the interview data was limited to a snapshot from a specific point in time, which made it challenging to evaluate how established the identified practices were. Sampling data gathered from different periods is also recommended in literature on grounded research (Charmaz 2000). These problems were compensated by the fact that logs from the idea management tool spanned for a period of over a year.

Regarding the possibility generalize the results of the research, it needs to be noted that data were gathered from a limited number of sources in a single case organization representing one type of

industry and a single idea management tool. There it is unreasonable to assume that identical practices would be found from all organizations using any idea management tool available. However, broad generalizations of phenomena are uncharacteristic to practice theoretical research, which emphasizes the importance of context in the constitution of people's behavior. Though practices emerging in another idea management tool implementation in another organization would most likely differ from the ones identified in this study, the findings presented give insight on potential bottlenecks and dependencies between different factors central to the utilization of idea management tools.

Despite all the described limitations, the validity of findings was ensured with careful selection of data sources and meticulous analysis. Interview sample consisted of people from different roles and hierarchical levels and views of both active and non-active users were taken into account. Idea management tool data and documents related to the innovation initiative supplemented the interview data well, providing both deeper insight and alternative perspectives to findings from the interviews. Findings from different data sources were triangulated rigorously. In addition validity was improved by the fact that data was examined by two researchers during the early phases of the analysis and also discussed with members from the case organization.

5.3 Future Research

As already discussed in the limitations of research section, the findings of this study are drawn from a single idea management tool adopted in a single organization. Literature on idea management tools would benefit greatly from more practice theoretical research conducted on application of such software. Dougherty and Hardy (1996) note large and mature organizations as having their own inherent characteristics when it comes to innovation efforts, which begs to questions what kind of results would be observed from smaller, less established organizations. Also, in this case adoption was supported with introduction of other innovation tools and appointment of new organizational roles. It would be interesting to examine implementation which would include solely the introduction of an idea management tool and see what kind of practices are then formed.

Though the orientation of research was more micro than most previous research on ICT practices (Orlikowski 1992, 2000; Boudreau and Robey 2005, Hayes and Walsham 2001), even more detailed examination of the behavior of the users and its antecedents would provide fruitful information on the use of idea management tools. This study found that there is considerable heterogeneity in the amount and type of comments which ideas receive. It would be very interesting to dive deeper into the relationships and dependencies related to commenting. What kind of factors prompt people to lengthier and more constructive contributions instead of just short

encouragement? Does the way idea is presented and described have an effect on how the community reacts to it? Does familiarity with the ideator play a part? Addressing issues such as these would enable people to better understand the key factors in idea development conducted in virtual environment.

Thirdly, apart from the study of Boudreau and Robey (2005) there are very little studies which concentrate on change processes of ICT practices. This would require more longitudinal research on ICT applications such as idea management tools. Understanding this phenomenon would have major theoretical and practical contribution. It would be especially interesting to find out what kind of agency do different parties have with regards to influencing the practices of others related to the system. The present study showed that most parties involved with the idea management tool had interests to change the behavior of other parties. For instance, managers wanted do affect the types of ideas generated and shared, innovation coaches desired business line management to be more active and ideators wished for more constructive comments and feedback on their ideas. It would be interesting to find out how do these different parties attempt to affect the practices of their counterparts and what are the crucial factors in initiating and sustaining change processes related to innovation practices.

5.4 Implications for Practicioners

The findings of this study indicate that an idea management tool can be a powerful instrument in harnessing the power of the members of the whole organization to boost innovation efforts in a company. A large amount of ideas from individuals were successfully brought to the attention of managers and documented for future reference. Community as a whole helped single ideators by giving comments which helped in both creativity and implementation related issues during idea development.

Though it's impossible to pinpoint for certain the main reasons this for success, some contributing factors can be identified. The findings of this study suggest that linking idea management tool adoption with implementation of other innovation boosting measures can be beneficial. Tool was launched as a part of larger innovation initiative which introduced several innovation related measures. Initiative was branded and strongly communicated throughout the organization. Efforts like these were found to strengthen the positive assumptions and expectations regarding innovation efforts in general in the organization. Especially the role of innovation coaches can be emphasized in keeping the community active. Appointing people responsible for such facilitator roles is something which organizations considering adopting idea management tools or improving current implementations should contemplate.

Problems related to the implementation of ideas show the difficulty in idea management tool adoption. Challenges in the final parts of the process in a way nullified benefits which could be reaped from the implementation. In the end efforts didn't materialize into new offerings for customers. Many lessons can be learnt. Especially the coherence and compatibility of development related practices should be emphasized. Everything should be done to ensure that the momentum created with the help of the idea management tool in the early phases of innovation processes is preserved during points of discontinuity like when development responsibility is transferred to new parties. If the organization has a separate formal process for the front end and development phases, these need to be tightly linked so that no bottlenecks are formed. One way to achieve this is to ensure that there is enough slack for the pursuit of unexpected and riskier development opportunities besides the more anticipated and planned development needs. In addition to resources, mental commitment needs to be secured as well. It is important that the reward arrangements of people responsible for development efforts incentivize attending ideas from different sources such as internal needs of the unit, idea management tool and customers.

Regarding rewarding arrangements in general, it was noted that good incentivization is a tough task. It was noted that at times direct rewards for active use of the system actually created discouraging effects. This happened when the recipient of the award thought that he'd been given the prize for a bad idea and another time when ideator's colleagues belittled the award she had received. Complex relationships were also found between different reward arrangements and the use of the tool. It is crucial to ensure that key performance indicators of employees embrace spending time using the tool. Otherwise use is perceived as unacceptable even if it is encouraged in internal communication.

Some suggestions regarding the design of idea management tools also surfaced during the study. Practice where innovation coaches copy-pasted the private messages received from business line managers and other experts made users feel that those parties were not present in the system. One way to address this problem would be to replace private messaging with other technical solutions. People could be prompted for comments with for example feature which enables tagging users in comments. Such solutions are already utilized in leisure applications such as Facebook[3]. Another opportunity for improving the features of idea management tools relates to the bundling practices enacted by innovation coaches. The idea management tool used did not incorporate features which would have enabled combining a group of related ideas and the comments they had received into a single idea entity. Features that make this possible might make the work of facilitators and management easier.

[3] https://developers.facebook.com/docs/opengraph/guides/tagging/#people

It must be noted however that both described problems could also be addressed without modifying the tool. Encouraging business line managers and experts to participate in the tool more actively would remove large part of the need to prompt for comments. This would also bring the benefits of increased legitimization of use. Similarly, when bundling ideas, a new idea description which incorporates all the relevant aspects of the ideas combined could simply be posted to the tool. Though a bit more cumbersome, on a technical level it is not overly complicated to move all comments under the new idea without specific features addressing it.

6 Summary

The present study has examined idea management tools and their ability to support grassroots level innovation activities from a practice theoretical perspective. Literature review revealed that majority existing research on innovation management tools follows mechanistic world view which presumes that tools have direct unilateral effect on the behavior of the users and that the experienced benefits are mostly constituted by the technical features of the tools. Design of the tools has emphasized systematization of innovation efforts and measures aiming reduce uncertainty in development.

However, research on innovation practices and practices of ICT use challenge these assumptions. Since innovation processes are inherently uncertain, the sensibility of trying to impose opposing ideals has been questioned. Also, practice research has emphasized the role of contextual factors in the constitution of practices around support tools as well as unpredictability and uncontrollability of the constitution process.

Empirical single case study was conducted in a financial organization which had recently adopted an idea management tool. Research data consisted of 19 interviews, rich logs from the idea management tool and a vast array of documents related to the preparatory phase of the adoption process. Data analysis was inspired by the principles of grounded theory (Charmaz 2000) and systematic combining (Dubois and Gadde 2002). A modified version of a research frame proposed by Orlikowski (2000) for the examination of constitution of ICT related practices was used.

In the case company, idea management tool was used especially for sharing raw, unpolished ideas which were outside the idea generator's formal job role. User community provided support to creative individuals by offering encouragement, proposals for refinement as well as suggesting potential contacts and stakeholders. Use of the system in general was perceived as an extra role effort which presented a barrier for use. Large differences between ideas were found in the number and nature of received comments.

Existing development, rewarding and inter-divisionary collaboration practices had a major impact on resulting benefits from the idea management tool adoption. Discrepancies between existing practices and new practices around the idea management tool generated tensions which hampered organizations ability to implement ideas. Tensions lead to lengthy decision making processes which eradicated the momentum which had formed around the idea. Problems started to skew idea selection practices towards favoring ideas which were easy to advance, instead evaluating ideas based on their content and other qualities.

Empirical observations indicated that ensuring compatibility between local practices of different parties as well as global organizational practices such as rewarding is a key issue in ensuring success in idea management tool adoption and innovation efforts in general.

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Appendixes

Interview Protocol, Employees

Tausta

- Kauan talossa?
- Mihin organisaatioon kuluu? Tiimi? Kenelle raportoit / esimies?
- Koulutus?
- Kenen kanssa teet töitä? Miten olet yhteydessä näihin ihmisiin?
- Kerro työstäsi
    - Mitä teet täällä?
    - Kuvaile työtehtäviä?
- Millainen on normaali työpäivä? Muutama tavallinen arkkityyppi?

Innovaatiokäytännöt

- Miten suuri osa työstäsi liittyy uuden kehittämiseen / innovointiin?
- Mitä tarkoittaa innovointi?
- Minkä asioiden parissa teet kehittämistä?
    - Onko tämä palvelukehitystä, tuotekehitystä/teknologiakehitystä vai jotakin muuta?
    - Minkälaiset ideat ovat palveluideoita?
    - Onko palveluiden kehittäminen erilaista toimintaa (vrt. "normaali" tuotekehitys)?
    - (Jos esimerkki ei ole palvelua, niin tekeekö palvelukehitystä lainkaan? Miksei?)
    - Oletko tyypillinen tapaus? (minä kehitän, muut ei?)
- Mikä motivoi sinua kehittämistoimintaan?
- Vaaditaanko sinulta kehittämistoimintaa/kannustetaanko siihen? Minkälaisten asioiden suhteen (tuote/palvelu yms.)?
- Kuinka paljon kehität ideoita yksin / yhdessä?
- Miltä osin viet ideoita eteenpäin virallisia / epävirallisia kanavia pitkin?
    - Joudutko piilottelemaan ideoita? Odottamaan oikeaa hetkeä?

- Ideapolku
    - Kerro esimerkki ideasta, jonka olet vienyt hoksaamoon ja yksi jota et ole vienyt
        - Mistä idea tuli? Miten eteni? Miten päättyi (yhä kesken, hylättiin, vietiin käytöntöön)? Mitä pyrittiin tekemään?
        - Keitä oli mukana?
        - Mitä työkalujara/rakenteita käytetit/käytitte?
        - Mistä sait tukea?
    - Onko tapaus tyypillinen vai ei? Millä tavalla?
    - Oliko tapaus onnistunut vai epäonnistunut?
        - miltä osin?
    - Erot Hoksaamo- ja ei-hoksaamo-prosessin välillä

Innovaatiorakenteet

"Olemme kuulleet, että teillä on näitä innovaatiotyökaluja, haluaisimme kuulla sinun kokemuksistasi niistä".

1. Innovaatiovalmentajat
2. Lab
3. Tilaisuudet
4. Fasilitoidut ideasessiot

5. Työkalu
6. (Verkkokurssi)

- Mistä näistä sinulla on kokemuksia? Oletko kuullut näistä?
- Miten näistä on viestitty? (ota huomioon kokonaisuus vs. yksittäiset osaset)
- Kenelle ne on tarkoitettu? Kuka niitä käyttää? Jääkö joku ulkopuolelle?
- Jos ei ole kokemuksia, miksi? Jos on kokemuksia, miksi olet lähtenyt mukaan?
- Kerro kokemuksistasi? Miten ne ovat auttaneet sinua?
- Tekevätkö nämä työkalut ideoiden esiintuomisen helpommaksi? Miten? Missä suhteessa eivät?
- Tekevätkö ideoiden kehittämisen helpommaksi? Entä implementoinnin?
- Lisäävätkö nämä toimenpiteet mahdollisuuksia kehittää omaa työtä? Koskevatko ideat, joita esitetään/toivotaan omaa työtä vai jotakin muuta?
- Ovatko nämä toimenpiteet vaikuttaneet negatiivisesti johonkin asiaan?
- Ovatko toimenpiteet lisänneet innovointiin kohdistuvaa innostusta/motivaatiota? Mahdollisuuksia toteuttaa tätä innostusta? Oma innostus vs. organisaatiossa yleensä
- Missä nämä "rakenteet" voi auttaa, missä ei? Minkälaisille ideoille soveltuu, mille ei? Minkälaisille ideoille, mille ei?
- Tarvittaisiinko näiden toimenpiteiden/työkalujen lisäksi jotakin lisää/muuta?
- Mitkä ovat odotukset näiden toimenpiteiden suhteen?

Interview Protocol, Innovation Coaches

Tausta

- Kauan talossa?
- Mihin organisaatioon kuluu? Tiimi? Kenelle raportoit / esimies?
- Koulutus?
- Kenen kanssa teet töitä? Miten olet yhteydessä näihin ihmisiin?
- Kerro työstäsi
    - Mitä teet täällä?
    - Kuvaile työtehtäviä?
- Millainen on normaali työpäivä? Muutama tavallinen arkkityyppi?

Innovaatiokäytännöt

- Miten suuri osa työstäsi liittyy uuden kehittämiseen / innovointiin?
- Mitä tarkoittaa innovointi?
- Minkä asioiden parissa teet kehittämistä?
    - Onko tämä palvelukehitystä, tuotekehitystä/teknologiakehitystä vai jotakin muuta?
    - Minkälaiset ideat ovat palveluideoita?
    - Onko palveluiden kehittäminen erilaista toimintaa (vrt. "normaali" tuotekehitys)?
    - (Jos esimerkki ei ole palvelua, niin tekeekö palvelukehitystä lainkaan? Miksei?)
    - Oletko tyypillinen tapaus? (minä kehitän, muut ei?)
- Mikä motivoi sinua kehittämistoimintaan?
- Vaaditaanko sinulta kehittämistoimintaa/kannustetaanko siihen? Minkälaisten asioiden suhteen (tuote/palvelu yms.)?
- Kuinka paljon kehität ideoita yksin / yhdessä?
- Miltä osin viet ideoita eteenpäin virallisia / epävirallisia kanavia pitkin?
    - Joudutko piilottelemaan ideoita? Odottamaan oikeaa hetkeä?

- Ideapolku
    - Kerro esimerkki ideasta, jonka olet vienyt hoksaamoon ja yksi jota et ole vienyt
        - Mistä idea tuli? Miten eteni? Miten päättyi (yhä kesken, hylättiin, vietiin käytöntöön)? Mitä pyrittiin tekemään?

        - Keitä oli mukana?
        - Mitä työkalujara/rakenteita käytetit/käytitte?
        - Mistä sait tukea?
    - Onko tapaus tyypillinen vai ei? Millä tavalla?
    - Oliko tapaus onnistunut vai epäonnistunut?
        - miltä osin?
    - Erot Hoksaamo- ja ei-hoksaamo-prosessin välillä

Innovaatiorakenteet

"Olemme kuulleet, että teillä on näitä innovaatiotyökaluja, haluaisimme kuulla sinun kokemuksistasi niistä".

7. Innovaatiovalmentajat
8. Lab
9. Tilaisuudet
10. Fasilitoidut ideasessiot
11. Työkalu
12. (Verkkokurssi)

- Mistä näistä sinulla on kokemuksia?
- Mitä näistä olet (ollut) itse kehittämässä?
- Missä sinulla on aktiivinen rooli ylläpitäjänä?
- Miten näistä on viestitty? (ota huomioon kokonaisuus vs. yksittäiset osaset) Mikä on oma rooli?
- Kenelle ne on tarkoitettu? Kuka niitä käyttää? Jääkö joku ulkopuolelle?
- Missä nämä "rakenteet" voi auttaa, missä ei? Minkälaisille ideoille soveltuu, mille ei? Minkälaisille ideoille, mille ei?
- Kuka on vastuussa kokonaisuudesta? Miten sitä seurataan?
- Kuka on vastuussa eri osasista?
- Miten onnistumista mitataan? Mitä konkreettisia tavoitteita on?
- Millaista palautetta on tullut näistä toimenpiteistä? Keneltä? Mitä kautta?

- Kerro kokemuksistasi innovaatiovalmentajana
    - myös koulutus and valinta

- Miten ne ovat auttaneet sinua omassa innovaatiotoiminnassasi?
- Tekevätkö nämä työkalut ideoiden esiintuomisen helpommaksi? Miten? Missä suhteessa eivät?
- Tekevätkö ideoiden kehittämisen helpommaksi? Entä implementoinnin?
- Lisäävätkö nämä toimenpiteet mahdollisuuksia kehittää omaa työtä? Koskevatko ideat, joita esitetään/toivotaan omaa työtä vai jotakin muuta?

- Mitkä ovat odotukset näiden toimenpiteiden suhteen?
- Ovatko toimenpiteet lisänneet innovointiin kohdistuvaa innostusta/motivaatiota? Mahdollisuuksia toteuttaa tätä innostusta? Oma innostus vs. organisaatiossa yleensä
- Mitä haasteita olette kohdanneet matkan varrella? Mitä haasteita ennakoit? Mikä voi mennä pieleen?
- Näetkö mahdollisuutta siihen, että toimenpiteillä voi olla jotakin negatiivisia vaikutuksia?
- Tarvittaisiinko näiden toimenpiteiden/työkalujen lisäksi jotakin lisää/muuta?

Interview Protocol, Management

Tausta

- Kauan talossa?
- Mihin organisaatioon kuluu? Tiimi? Kenelle raportoit / esimies?
- Koulutus?
- Kenen kanssa teet töitä? Miten olet yhteydessä näihin ihmisiin?
- Kerro työstäsi
    - Mitä teet täällä?
    - Kuvaile työtehtäviä?
- Millainen on normaali työpäivä? Muutama tavallinen arkkityyppi?

Innovaatiokäytännöt

- Miten suuri osa työstäsi liittyy uuden kehittämiseen / innovointiin?
- Mitä tarkoittaa innovointi?
- Minkä asioiden parissa teet kehittämistä?
    - Onko tämä palvelukehitystä, tuotekehitystä/teknologiakehitystä vai jotakin muuta?
    - Minkälaiset ideat ovat palveluideoita?
    - Onko palveluiden kehittäminen erilaista toimintaa (vrt. "normaali" tuotekehitys)?
    - (Jos esimerkki ei ole palvelua, niin tekeekö palvelukehitystä lainkaan? Miksei?)
    - Oletko tyypillinen tapaus? (minä kehitän, muut ei?)
- Mikä motivoi sinua kehittämistoimintaan?
- Vaaditaanko sinulta kehittämistoimintaa/kannustetaanko siihen? Minkälaisten asioiden suhteen (tuote/palvelu yms.)?
- Kuinka paljon kehität ideoita yksin / yhdessä?
- Miltä osin viet ideoita eteenpäin virallisia / epävirallisia kanavia pitkin?
    - Joudutko piilottelemaan ideoita? Odottamaan oikeaa hetkeä?

- Ideapolku
    - Kerro esimerkki ideasta, jonka olet vienyt hoksaamoon ja yksi jota et ole vienyt
        - Mistä idea tuli? Miten eteni? Miten päättyi (yhä kesken, hylättiin, vietiin käytöntöön)? Mitä pyrittiin tekemään?
        - Keitä oli mukana?
        - Mitä työkalujara/rakenteita käytetit/käytitte?
        - Mistä sait tukea?
    - Onko tapaus tyypillinen vai ei? Millä tavalla?
    - Oliko tapaus onnistunut vai epäonnistunut?
        - miltä osin?
    - Erot Hoksaamo- ja ei-hoksaamo-prosessin välillä

Innovaatiorakenteet

- Mikä on oma tausta innovaatioproggiksen parissa?
- Mitä tällä muutoksella tavoitellaan?
- Mitä tarkoitetaan työntekijälähtöisellä innovoinnilla?
- Miksi halutaan tukea työntekijälähtöistä innovointia, miksi se on parempaa kuin kohtovetoinen/harvoille keskittynyt?
- Millä nimellä tätä kokonaisuutta kutsutaan täällä organisaatiossa?
- Kuuluuko tähän muutosprosessiin muutakin kuin nämä osat?
    13. Innovaatiovalmentajat
    14. Lab
    15. Tilaisuudet
    16. Fasilitoidut ideasessiot
    17. Työkalu
    18. (Verkkokurssi)

- Kerro muutosprosessin vaiheista tähän asti + tulevista suunnitelmista (muutosprosessin tarina)
- Miten tästä on viestitty? (ota huomioon kokonaisuus vs. yksittäiset osaset)
  Mikä on kohderyhmä? Kenelle eri osaset on tarkoitettu? Kuka niitä käyttää?
- Minkälaista innovaatiotoimintaa halutaan?

    - Minkälaista kehittämistä (oma työ/muuta ideat)
    - Palvelukehitys/teknologinen kehitys/muu
    - Mihin vaiheeseen prosessia?
- Missä nämä "rakenteet" voi auttaa, missä ei? Minkälaisille ideoille soveltuu, mille ei? Minkälaiselle toiminnalle, mille ei?
- Kuka on vastuussa kokonaisuudesta? Miten sitä seurataan?
- Kuka on vastuussa eri osasista?
- Miten onnistumista mitataan? Mitä konkreettisia tavoitteita on?
- Mistä näistä sinulla on kokemuksia?
    - Jos ei ole kokemuksia, miksi? Jos on kokemuksia, miksi olet lähtenyt mukaan?
    - Kerro kokemuksistasi? Miten ne ovat auttaneet sinua?
- Millaista palautetta on tullut näistä toimenpiteistä? Keneltä? Mitä kautta?
- Ovatko toimenpiteet lisänneet innovointiin kohdistuvaa innostusta/motivaatiota organisaatiossa? Miten tämä on näkynyt? Miten itselläsi?
- Mitä haasteita olette kohdanneet matkan varrella? Mitä haasteita ennakoit? Mikä voi mennä pieleen?
- Näetkö mahdollisuutta siihen, että toimenpiteillä voi olla jotakin negatiivisia vaikutuksia?
- Tarvittaisiinko näiden toimenpiteiden/työkalujen lisäksi jotakin lisää/muuta?